

AMERICAN VETERINARY REVIEW,

AUGUST, 1891.

EDITORIAL.

VETERINARY CURRICULUM.—Considering the period during which the arts of teaching have been applied to the subjects included within the range of veterinary science and practice, in most of the countries of Europe, and notably in France, the results, up to the present time, hardly seem to be adequate and satisfactory. That the experience of these years of trial has not brought the instructors to the point of perfection in their methods and appliances as teachers, is perhaps not to be wondered at, but that they ought more nearly to have approximated that point, may safely be affirmed. French veterinarians have not been unobservant of this condition of things, and of late years they have not been backward in suggestions of changes and improvements, until at length, as the result of the careful and laborious study of a committee of veterinarians, a plan was formulated embracing the changes and improvements judged to be desirable, and their conclusions having been duly submitted to the proper authorities, have been by their order put in the course of experimental and practical trial.

But it would seem that an important question has still been somewhat overlooked, in omitting to provide for so essential a matter as the creation of a special chair of Cattle Pathology. It is, indeed, a most remarkable fact that such a special department has not been in existence from the first as a separate chair. We well remember how Alfort's clinics were comparatively lacking in cattle patients, though the

great Delafond gave us as good a course of lectures on cattle diseases as could be obtained in either of the other two French Schools at Lyons or at Toulouse, and still the latter was considered superior in respect to the opportunities it afforded for the clinical cattle study, although in respect to equine patients the first place was accorded to Alfort.

The object of the new departure, as we understand it, is the formation of a special department, with a special professor, upon whom will necessarily devolve the duty of providing sufficient material for the cattle clinics. The fact is certainly a peculiar one, that the land which is the birthplace of veterinary science should be the most dilatory in establishing this as a special department, so long after its right to be so distinguished had been recognized by some others among the principal veterinary schools of Europe. We say *some*, for in several we still find the subject of Bovine Pathology committed to the care of the Professor of Theory and Practice.

On this continent our schools have copied so much from the European style of organization that it is not surprising that the same condition should exist on the point in question. Yet here there are one or two schools where the pathology of cattle forms a distinct chair, while in some others it is given to the Professor of Theory and Practice, meaning, often, the overtired gentleman who lectures on equine pathology, on bovine diseases, and also, as a complimentary matter, adds to his already heavy burden that of delivering lectures on diseases of the sheep, the hog and the dog.

There is evidently something here to reform, and on this continent, where the schools are yet young (though some may claim a life of a quarter of a century), the present is the time to see that the work of organization is well studied and settled, in order that the labors of the members of the faculty may be equally divided and fairly appointed.

In glancing over the announcements of our American schools, we cannot avoid observing that in some instances the hours of the curriculum are so filled as to assign work to one chair which belongs to another. In one it is a special department on ophthalmology, or of diseases of the feet, which

are parts, evidently, of the department of surgery. In another it is a special department of helminthology, or of dental surgery, which belong respectively to general practice and to surgery, all of which we cannot but consider great error, and one which calls for rectification at the hands of the governing faculties of the American veterinary schools, through a concert of action which must be advantageous to all, and principally to the profession—when adopted.

Why cannot these various bodies meet together, say representatively, in a convocation of the Dean of each of our veterinary institutions, to discuss this subject, and any other that might be submitted to their consideration. Such a convocation would certainly not be out of the way; even as a novelty it would be a great event, from which much benefit might be extracted for our profession. When shall the first meeting be announced?

GENERAL MEDICAL EDUCATION.—A new departure has also been taken by several of our medical schools, the bugle being first sounded in Boston, and answered by Philadelphia, which it is intimated, *sotto voce*, will also soon have a response from New York. This new departure is the extension of the medical course to four years' attendance, and it will be none too short a time to acquire knowledge and skill sufficient to practice the healing art in its best manner. This is great progress. The Medical Department of the University of the City of New York also makes some changes, establishing three years attendance at college as obligatory, and, in effect, endowing the different chairs, and making her faculty independent of the number of students—probably the best measure for assuring the thorough execution of their duties on the part of the faculty, and for relieving the examination for graduation of any suspicion of interest and partiality.

These are important steps, indeed, and veterinarians cannot consider them without feeling a sentiment of ambition, while realizing the obligations which these changes in medical education are calculated to impose on the student of veterinary science. The days of private undertakings in the es-

tablishment of veterinary schools are coming to an end, and the institutions that now exist are destined to become in due time branches of university study, and placed under obligation to accept the laws and regulations of the parent curriculum. The two years' course of crowded studies, begun and finished in a few months, is doomed, and until these changes are realized, the veterinary profession will never reach the standard to which it should aspire.

We may possibly, from these expressions, be accused of a change of opinion, from having some time since uttered doubts as to the propriety of a similar amalgamation, but we cannot continue blind to the signs of modern progress. Already, several of the continental universities have their veterinary departments, and we have them here; we have them in Canada; and it is urged even in England. This evidently shows that as yet the subject of veterinary education has not said its last word, and it seems no more than right to claim for it the benefit of the enlargement and thoroughness which it will enjoy under the care of our universities, as branches and departments of the great parent body.

PROFESSIONAL ITEMS.—The following information, recently received, is pertinent, and corroborative upon the subject of our preceding remarks. They strongly confirm the views to which we have been led to give expression:

Our friend, Dr. F. H. Osgood, M.R.C.V.S., has accepted the professorship of Cattle Pathology in the veterinary department of Harvard University. He will prove a valuable acquisition. Few men have had better opportunities for preparation than Dr. Osgood for the work of his department, or is capable of doing better justice to the duties of his post.

And again, it is announced for the veterinary department of Pennsylvania University, that important additions have been made to the Faculty by the Board of Trustees at their last meeting, in the choice in the veterinary department of Dr. S. S. J. Harger, as Professor of Veterinary Anatomy, and Dr. Leonard Pearson, who is now pursuing special studies at the Royal Veterinary School of Berlin, as Assistant Professor of Veterinary Medicine.

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A NEW VETERINARY COLLEGE.—The Cincinnati *Journal* brings us the news that "A College of Veterinary Medicine and Surgery" has been incorporated by the Secretary of State. We have not received any direct information relating to this new addition to our veterinary family, and hope that some of our Ohio friends will let us know how the infant is getting along. Let us meanwhile express our congratulations to its relations, and assure them of our best and sincere wishes.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—We have received the following notice from the Secretary of the New York Veterinary Society, and take pleasure in calling the attention of our *confreres* from the Excelsior State to this meeting, which we have no doubt will prove most interesting:

The semi-annual meeting of the New York State Veterinary Medical Society will convene for regular and important business at the parlors of the Grand Central Hotel, Broadway, New York City, on Wednesday, August 12, 1891, at 9 o'clock A. M.

Matters pertaining to veterinary legislation will be brought before the meeting, and will be very interesting to all veterinarians who are graduates and duly qualified to practice in this State. Papers on professional topics will be read by prominent members of the society.

It is earnestly hoped that all qualified veterinary surgeons who are not members, will take this opportunity to attend and become members of the society, whose aim and object is to promote the standing and protect the veterinary profession in the empire State.

ORIGINAL ARTICLES.

THE COMPARATIVE RELATIONS AND VALUES OF THE ANÆSTHETICS.

By G. ARCHIE STOCKWELL, M.D. F.Z.S., (Member of the New Sydenham Society, London).

Written expressly for the AMERICAN VETERINARY REVIEW.

II.

In the REVIEW of August, 1890, I considered Chloroform at some length. This undoubtedly is the most popular anæsthetic for experiments carried on within the precincts of

the physiological laboratory ; likewise, it is the favorite of the majority of veterinary practitioners, who, as a rule, are none too familiar with other anaesthetic agents, though the latter are none the less worthy of study, and often prove—aside from the mere question of danger—of even greater value.

That chloroform, as compared with the commonly accepted methods of employing ether, is the more convenient agent, and also more easily procured, transported and administered, may be admitted ; but that it is the best anaesthetic for general purposes is by no means to be conceded. Neither can it be admitted that even in the majority of cases, either in man or lower vertebrates, that it is the most desirable. Each anaesthetic has its special place and role, and special adaptability, and the practitioner must seek this and decide accordingly, in order to secure the best results. Again, though the lives of other vertebrates, as compared with man—owing to the egoism of the latter—are not, from moral and sociological standpoints, considered of equal value with human life ; this is purely an arbitrary assumption that should have no weight with the truly scientific practitioner ; there is no reason why a profession devoted to the saving of life and the mitigation of suffering, should not *always* avail itself of the best, and, therefore, most scientific appliances. This applies to anaesthetics as well as to medical and surgical therapeutics proper. It seems to me, that to draw a line in this respect between animals and man is criminal as well as arbitrary, for there are many biped brutes less deserving of sympathy than the quadrupeds. Again, there are many of the former who regard animal lives, which represent a monetary value, of greater moment than the lives of their families and immediate offspring : the demise of the latter is the "will of God," for they represent an outlay, and, moreover, are easily replaced in a way that tends to add to his resources ; while the former are regarded as income, and so much available capital, and their loss, instead of being a design of Providence is attributed solely to the ignorance of the practitioner. This seems almost a brutal assertion, but it

is none the less true, and more common by far than may be generally imagined. With this digression, intended solely to inculcate the broad principle, that therapeusis is not to be measured or limited by arbitrary zoological lines drawn by the self-sufficient vertebrate, and that medicine, whatever its special class or rank, is truly scientific only in proportion to its best and highest applications. I will turn to the consideration of :

ETHER.

Although this agent has a long range in applicability in medicine and pharmacy, and is daily increasing in value as a solvent, its most important place is as an anæsthetic. As an anæsthetic, moreover, it is scientifically the only one adapted to general use, and really appropriate to all uses, and—with the possible exception of nitrous oxide—the only *safe* anæsthetic for either general or special purposes : I use the term “safe,” however, in a relative sense, for the condition known as anæsthetic is in itself a dangerous one, and dangerous in proportion to the degree to which it is carried. To impress this fact, it is only necessary to remember that the number of deaths fairly charged against all anæsthetics is quite numerous, and the number constantly increasing against all.

When ether is mentioned in connection with anæsthesia, it is pure *oxide of ethyl* (*ether fortior*) that is understood, and not the compound sanctioned by pharmacopœias, and generally sold in shops “as sulphuric,” which contains usually about 25 per cent. of alcohol. There is little difficulty in making the selection, however, as in the United States Dr. Edward R. Squibb, of Brooklyn, practically enjoys a monopoly of the product, which is sold only in sealed tins that bear his label.

The especial advantage of ether as an anæsthetic agent is, that it will increase instead of diminish arterial pressure, or, in other words, that it is a cardiac stimulant instead of a depressant like chloroform, the pulsation in lethal cases continuing for a greater or less period after arrest of respiration. Its physiological sequences, when inhaled or injected into the rectum, colon, and peritoneal cavity, are as follows:

1. The cerebrum :
2. The cerebellum :
3. The sensory centres of the spinal cord :
4. The motor centres of the spinal cord :
5. The sensory centres of the medulla oblongata :
6. The motor centres of the medulla oblongata :

Thus it will be observed, that if the drug be pushed to its utmost limits, the animal in consecutive order will lose :

1. Local sensibility of extreme parts and the control of certain muscles there situated :
2. Intellectual power ;
3. The power of co-ordinative movement, and of the loco-motor organs generally :
4. The ability to perceive sensory impressions, even in localities in immediate proximity to the spinal centres, which should be the utmost limit where the conservation of life is desired :
5. The power of respiration :
6. The movements of vegetative life, *to wit*, of the heart, intestines, etc.

Just here permit me to recall again one of the conclusions formulated by the second Hyderabadi Chloroform Commission, in paragraphs 45 and 46, of the report as published in *The Lancet* of London.*

The experiments with ether show that it is impossible to procure anaesthesia with this agent, unless some form of inhaler is used which *thoroughly* excludes the air. If surgeons choose to be content with a condition of semi-anaesthesia, it can, no doubt, be produced with perfect safety *** by ether held rather closely to the mouth ** *. If more perfect anaesthesia is required, it can be procured by excluding the air more rigidly, but then there is *exactly the same danger as from giving chloroform!*

This certainly admits of but one interpretation, viz., that where perfect anaesthesia is to be desired, the action of ether and chloroform is every way identical; at the same time is implied—which will be news to most surgeons and anaesthetists—

* January 18th, 1890.

tists—that the majority of operations are performed during an imperfect condition of anæsthesia.

In the previous paper in the REVIEW, devoted to chloroform, it was, I think, sufficiently shown that such premises are untrue, more especially the first. Admitting what was pointed out by Dr. J. Snow, as long ago as 1856, that under specific circumstances chloroform may induce fatality in man through respiratory paralysis, or simultaneous arrest of respiration and circulation, and is more prone to do so in animals under experimentation, for reasons before explained; such is by no means a frequent or even common result, even among the latter; and further—the *Felidæ* possibly excepted—such has supervened in animals only when administered in specific quantities and volume, with the deliberate purpose of inducing death! At the same time the Commission ignores the fact, unwittingly proven by itself, that complete and sudden vaso-motor paralysis, which has positively never been observed to follow ether anæsthesia, is a constantly threatening danger where chloroform is employed.

The experiments of Dr. Anstie are doubtless familiar to most of my readers. Of ten rodent animals intended to be killed by being introduced into an atmosphere super-saturated with ether vapor, three recovered, six exhibited the heart still active at periods varying from three to twelve minutes after respiration had failed, and in one, cardiac and respiratory arrest were apparently simultaneous, or nearly so, as “when the chest was slit open the heart seemed motionless, except for a slight pulsation of the auricles; irritation by pricking failed to set the ventricles in motion again.”

Recalling the fact that these experiments were made with the “sulphuric ether,” of the British Pharmacopœia of 1864, a somewhat imperfect product containing a goodly percentage of alcohol, I recently personally repeated, upon a series of thirty-seven rodents, employing the *etheris fortior* of Squibb; otherwise the circumstances and surroundings were parallel. The result was, that in each instance save one, the heart was found beating after respiration had ceased: the exception was an animal that began to again respire while

under the knife. The average duration of pulsations for the series was 257 seconds after the heart was exposed, which, allowing thirteen seconds for removal from the jar and vivisection, would make a total of four and one-half minutes—ample time, if such had been desired, to institute measures for resuscitation.

These experiments, and others that have been made by various individuals upon cats, dogs, hares, guinea-pigs, etc., in which varying quantities of stronger ether (sufficient to induce profound anaesthesia, however,) were respired, introduced into the rectum and colon, or injected into the peritoneum, fully vindicating the principle propounded by Dr. Snow, that fatality rarely, if ever obtains, save as the result of supersaturation of the economy; that is to say, that there must be arrest of respiration, whereby the blood is deprived of its necessary oxygen, the latter being replaced by ether vapor. If this premise be true, as it certainly seems to be, cardiac arrest can never occur save as a sequel to pulmonary paralysis, and even where there is ether narcosis tending to fatality, there is usually a margin wherein it is possible in most instances to resuscitate the patient. Herein is an immeasurable factor for safety, such as can secure to chloroform only in very rare and unusual cases. There is, perhaps, an exception, or at least partial exception, to be taken as to ether, that, however, does not apply to anaesthesia for surgical purposes, but to the physiological laboratory, since, as one experiment of Anstie's seems to prove, an animal introduced bodily into an atmosphere wholly saturated with ether vapor, and therefore with no opportunity for elimination, owing to the overloading of the circulation, due to the absence of oxygen, may succumb to apparently coincident or simultaneous pulmonary and cardiac arrest.

For a long time it was believed that the circulation and respiration were interdependent, and so the former made the basis of watchfulness in ether as well as chloroform anaesthesia; and even yet this is the procedure of many practitioners. Such, however, must necessarily prove a false guide and a "broken reed" to lean upon, since it not infre-

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quently happens, in animals as well as man, that the pulse is greatly quickened while the respiration remains normal or undisturbed. Again, in anaesthesia, as in adynamic fevers, extreme rapidity of circulation is a symptom of cardiac debility, and in ether narcosis is the signal of danger and of impending pulmonary as well as cardiac arrest: it denotes supersaturation of the economy, whence paralysis may at any instant supervene, when it will first manifest itself definitely in the respiratory centers. Obviously it is such cases where we should fear almost simultaneous arrest of pulmonary and cardiac functions. The pulse, therefore, while it may advantageously and desirably be watched at intervals, in the main is of less importance in ether anaesthesia than the respiration, the character of which should be continuously and carefully scrutinized.

Another fallacy punctured, and lesson taught is, that cardiac excitement under ether does not pertain to a pre-anaesthetic stage, but instead must be held as evidence of partial paralysis of the sympathetic system. Manifestly the latter is involved, even in gradual anaesthesia, by the paralyzing influence of ether at an earlier stage of narcosis than that by which the medulla oblongata is affected. Says Dr. Anstie:*

It can hardly be doubted that the increased effects of more rapid impregnation of the blood with the narcotic would tell more rapidly on the sympathetic nerves than on the medulla oblongata, or on the pneumogastric branches, on account of the peculiarly intimate connection of the former with the arterial tree. And any one who has experimented upon animals that have died of apnæa must have been struck with the powerful exciting influence which can be brought to bear on the heart by rough handling of the thoracic sympathetic ganglia, such as must inflict injury on them not inferior to that which a paralyzing narcotic might cause. Under other circumstances it seems desirable to study carefully the various evidences of sympathetic paralysis which present themselves in the course of ether narcosis.

Essentially, then, ether anaesthesia is not divided into two stages, one of exitement, the other of narcosis, as is often

* *Stimulants and narcotics*, p. 275.

taught or implied, but the process is practically one, and consists, both in its early and late stages, of paralysis of the various sections of the nervous system. It must be admitted, however, that the drug has another physiological action, one quite different from the foregoing, that develops as the results of doses insufficient to induce paralysis of any portion of the nervous system, and which is stimulant purely and not to be considered as a stage of excitement; but this has nothing in common with anaesthesia.

I have before remarked that ether is a stimulant to both the respiratory and circulatory systems, which assertion, taken in connection with statements just made as to its paralyzing effects, may at first glance seem paradoxical. This is more apparent than real, however, as it is through this very paralyzing action upon the sympathetic system, disarranging the balance between the vaso-motor and vaso-inhibitory nerves, that this stimulation obtains. Thus the seeming gulf is bridged, and all discrepancies reconciled.

Ether, then, stimulates by a specific paralyzing influence both circulation and respiration, up to a certain point, beyond which it is dangerous to pass, and which need not be passed if the drug is understandingly administered. This I think I have sufficiently shown. Nevertheless, that it is not often properly administered, must be admitted, since as a rule, in the United States, "cramming" and "drenching" methods, as they are very properly dubbed by our brethren of the British Isles, generally obtain; it is such that have brought discredit upon ether abroad. It is an almost universal method in hospitals, and in no small degree in private practice, to relegate the administration of the anaesthetic to an inexperienced junior, or a student, and from the very first to crowd the inhaler, saturated to its utmost with the drug, down upon the nose and mouth and there forcibly hold it in spite of the struggles of the patient, not only until anaesthesia results, but uninterruptedly throughout the operation except as stertor supervenes. It is simply a smothering process, dangerous and demoralizing to the patient, disgusting to observers, misleading in the estimate conveyed to students as to the safety of

the drug, and discreditable in every way to both operator and anæsthetist, who place themselves in a dilemma between two horns—*unpardonable ignorance* and *vicious cruelty*. How different from the custom abroad, notably in the United Kingdom, where the management of anæsthesia is always intrusted to an expert, a professional anæsthetist! The result is, the patient is suddenly choked and strangled into submission and into narcosis, by means of a highly irritating vapor, without once being permitted a whiff of the much needed oxygen. All the sensations of asphyxia and impending dissolution are present, and it is little wonder that fatalities from shock and other causes sometime supervene. Indeed, the miracle is they are not more frequent, and that bronchitis and other unpleasant and possible sequelæ are not more common. A few years since a case of strangulated hernia was brought into the operating room of one of the large American hospitals, when the surgeon commanded his assistant, an undergraduate, to "use plenty of ether and press the cone down firmly on the mouth and face to avoid a lengthened period of excitement." This was done, and the hernia reduced by taxis during the relaxation, when it was discovered the vital spark had fled; life was extinct even before the operation began, the poor fellow having been *smothered* with ether vapor. In all probability the first sudden application produced strangulation and spasmodic closure of the glottis.

It should never be forgotten that ether vapor when too much diluted with air is a simple stimulant incapable of inducing any condition except excitement and intoxication, no matter how much used or for how long a time; and, further, that when too diluted and the mechanical act of respiration at the same time obstructed by pressing down upon the mouth and nose the cone or inhaler, the patient may be very easily partially or wholly suffocated.

Neither is there economy of time or material in the "cramming" process, as is too frequently claimed, as it tends to render the patient resistant, and consequently more difficult to anæsthetize, and to keep anæsthetized. The short, shallow and imperfect respiration induced thereby, and the irritation

that obtains, so long as they continue, admit of the utilization of but very little of the ether vapor, and thus anaesthesia is delayed, the anaesthetic uselessly wasted, and precious moments lost : and it must be believed also that this is not without a pernicious effect on the one undergoing anaesthesia, since it is not the contrary, and there is no middle ground. On the other hand, nothing tends more to secure the prompt and successful effect of ether than the avoidance and prevention of the strangling interference with the mechanical act of respiration. It takes but a moment in either man or animal to educate, so to speak, the lungs and respiratory passages, and allow to empty themselves of residual air by a gradual process of expiration, and this secures the confidence of the patient, encourages easy breathing, and thus tends to diminish the danger of shock ; moreover it mitigates, even if it does not wholly do away with, reflex muscular spasms and excitement. Finally, when the ether has filled the lungs, the inhaler may be pressed close to the mouth and nose, when anaesthesia quickly follows. By this method vastly less ether is consumed, and the much-boasted superiority of chloroform as regards rapidity of anaesthesia is proven illusory.

The fact is, too much ether is generally employed. The agent is ignorantly or carelessly wasted, or both, and this is favored by the general assumption that the drug, under any and all circumstances not due to some morbid condition pre-existing in the patient, is always innocuous and hence safe.

Such premise is false both in theory and fact. The condition of full anaesthesia, regardless of the agent employed, is, physiologically considered, most grave, for by suspending more than half of vitality it so closely approaches death as to be, under certain conditions, constantly recognized as one of the stages of final dissolution ; when we consider it fully, it becomes a cause for wonder that the boundary line between life and death can be so closely approached and yet so rarely passed. Familiarity therewith, and a distant view of accidents, owing to their comparative infrequency, lead medical men to plunge their patients into anaesthesia with little regard for its true nature and gravity ; it is forgotten that a condition

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so abnormal and in contravention to general physiological law, only a few years since excited the gravest apprehension, and that even now, when witnessed under other circumstances and surroundings—as the effect of narcotics, and defined as *poisoning*—is a cause of profound anxiety and secures the most active measures for its relief. It should be remembered that anaesthesia is *narcosis*, and consequently *poisoning*. In this connection permit me to quote the veteran, Dr. Edward R. Squibb,* one of the ablest of American scientists, whose laurels have been won in the ranks of both medicine and pharmacy, and as much in the physiological laboratory as over the chemist's table :

The roughly expressed though perhaps practical condition essential to anaesthesia, is diminished oxydation of the sensourium, and the primary object is to confine this within the limits of safety. It is a kind of partial asphyxia or suffocation, occurring, not in the organs of respiration and circulation primarily, but far back of those in the tissues where the vital power is generated or renewed. The air-passages normally admit oxygen, and the blood takes it up and carries it, but carries with it an agent which prevents or modifies its assimilation in the tissues which supply the vital forces. To diminish this assimilation or this supply, seems to constitute anaesthesia. To arrest or prevent it, is death by narcosis. Hence the line of greatest safety in practice is to regard the difference between anaesthesia and death as a difference in degree or quantity only. The condition may be partial, full, profound, or fatal, but with no distinct boundary line between the degrees. The two intermediate degrees or stages constitute anaesthesia proper, and the full anaesthesia is generally required in surgery, while the stage of partial anaesthesia is generally sufficient in medicine. In the production of anaesthesia, the more powerful, prompt, and efficient the agents and the larger the dose, the greater the liability to overleap the intermediate stages, and unexpectedly extinguish life.

This seems but plain, common sense, and physicians are very familiar with the principle in the action of all toxic agents and in the toxic influence of all acute diseases, and yet they often fail to apply it in their selection of the agent and the dose to produce this most acute of all diseased conditions,

* Ephemeris, vol. 2, p. 629.

wherein the issues of life and death are narrowed down—not to days and hours, but to a few minutes. Add to this fact that this condition rests with the physician or surgeon whether to produce it or not, and it is difficult to understand how its importance can be overestimated.

The condition known as anæsthesia must therefore be admitted to be in itself a dangerous one, and dangerous in proportion to the degree to which it is carried. And it must also be admitted that when the degree of full anæsthesia is reached, the signs which mark the approach of the profound and fatal stages are very much marked by the condition itself, so that the attempt to maintain the safer stage may produce those which are less safe without recognition of the fatal progress until one of two or three things suddenly occurs, with more or less sudden death. Then if the condition of anæsthesia be a dangerous one, all anæsthetics must be dangerous.

The waste of ether when employed for anæsthetic purposes has already been attended to. This is generally very great, and likewise unnecessary; there is no reason why more of this drug should be required than of chloroform, if properly administered. It is more than probable, also, that the nausea and vomiting that so frequently supervenes upon its use, or following anæsthesia, is due to super-saturation of the patient with the vapor—at least such is the experience of the writer. With increased knowledge in the employment of anæsthetics, the volume of ether required to produce a definite result, is less than one-fourth that demanded fifteen years gone, and usually a half ounce to an ounce suffices for the induction of anæsthesia, the quantity demanded to maintain narcosis being proportionate to the length of time required for the operation. At a recent operation for the removal of a lupus of the glans penis, in a man of 25, the time required, dating from the moment the patient ascended the table until he was snugly ensconced in bed, was fifty-five minutes, and the amount of ether consumed was but seventeen fluid drachms; with long experience with both ether and chloroform, I am sure I could not have done better with an equal volume of the latter. Here I may be permitted to remark, that Dr. Squibb's apparatus for the administration of ether, though in little favor with those who believe in the drenching

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method, is often a valuable adjunct where rapid anæsthesia is desired with a minimum expenditure of fluid.* In this connection, some experiences of Dr. Squibb, as detailed in *Ephemeris* for July, 1884, † are of especial interest:

In the use of ether as an anæsthetic there is great room for reform. Just how small a quantity of ether would produce anæsthsia in the average adult subject is not known, though that is exactly what is wanted, but it is entirely safe to say that more than one-half the ether taken for this purpose is wasted; and not simply wasted, but injuriously saturates both the patient and the attendants. Indeed, the writer has frequently breathed the atmosphere of small ante-rooms, where patients were being etherized, where the proportion of waste ether vapor was so large as to render the air pretty certainly explosive. Ether vapor has a very considerable tension or power of diffusion, and air becomes nearly saturated with it very quickly and very easily; and such air is very actively anæsthetic. It is a habit in laboratories, when a flask or bottle, having been washed, has to be dried quickly for use, to rinse the water out first with a little alcohol, and then to rinse out the alcohol with a little ether. Then by inserting a tube in the bottom of the bottle and drawing the air into the lungs, by applying the mouth to the other end of the tube, all the ether may be quickly drawn out in the state of vapor, leaving the bottle dry. Now this does very well with small bottles, but when the ether with which a two-gallon bottle has been rinsed out, is poured out as far as possible, about one or two fluid drachms remain in the bottle, spread over the interior. The first and second inspirations through the tube are but partial, being interrupted by coughing or closure of the glottis, but they serve to so anæsthetize the air passages, that the fourth and fifth inspirations and all that follow may be deep and full. It has often happened to the writer, that before the ether vapor is all drawn out of the bottle the stage of excitement had passed, and that of anaesthesia is so well advanced that the tube can no longer be held to the lips. In a personal experiment based upon this experience, a half fluid ounce of ether contained in an eight-ounce, wide-mouthed bottle, were shaken round the bottle and the vapor simply smelled deeply with full inspira-

*For details and description of this apparatus, I will refer my readers to the Transactions of The New York State Medical Society for 1871, p. 197.

† Vol. II., p. 631.

tions, the bottle being removed and shaken round during the time of expirations. Seated in an armchair in such a position as not to be likely to fall, the smelling, in less than half a minute, had passed the experimenter through the stage of stimulation, and could only be continued by determined effort, the bottle constantly tending to slip from the hand, and the arm almost refusing to move by order of the will. Sleep must have occurred before the power was entirely gone, for on waking, it was found that ten minutes had elapsed since the beginning of the experiment. The bottle was found on its side on the floor, but with a considerable portion of the ether still in it. From this it is quite certain that from two to two and a half fluid drachms, if all utilized in the way described, is sufficient to anaesthetize one who is quite habituated to a prevalence of ether vapor around him.

Further, regarding nausea and vomiting, which is such a bugbear to some, I may say that aside from the quantity of ether inhaled, if the patient, animal or man, has partaken of a minimum of easily assimilable food at some time previous, and not too remote from the hour of intended anaesthesia, emesis is not likely to supervene during narcosis, though it or nausea may obtain in some slight degree after partial return to consciousness; but in no case is it accompanied with the frightful tearing retching that so frequently follows chloroform anaesthesia. The point to be remembered is, to so plan the administration of the anaesthetic that it shall find the stomach partially, and the duodenum wholly, employed, that they may not through idleness appeal to the gastric plexes. Too much food is as bad, or worse, than too little, for then it is rejected by spasmodic contraction of a distended gastric viscus. As a matter of fact, in domestic animals emesis is less apt to supervene in equines, who vomit only with difficulty, as the sequel of ether anaesthesia, than through chloroform anaesthesia; and the same is equally true of the *Canidæ* and *Felidæ* as a class, and who reject the contents of their stomach with the greatest facility.

The instances where chloroform should be preferred to ether cannot be accurately defined; this must be decided by the anaesthetist according to circumstances, and the surroundings and conditions affecting the one to be anaesthetized.

Nevertheless, there are some few occurrences and morbid conditions that strongly suggest for themselves a preference for the first named agent, viz.: 1. Aged creatures, who, as a rule, bear chloroform better than ether, especially as the latter may induce pulmonary troubles; 2. Operations about the mouth or respiratory organs where the actual cautery is to be used—ether is inhibited by its inflammability; 3. Cases of lung infection; but diseases of the pleura do not contraindicate ether if it is carefully and understandingly administered; 4. Where absolute muscular relaxation is demanded, as for the diagnosis of tumors, reduction of luxations, etc.; here chloroform is vastly the superior of ether because of the certainty of its effect; 5. In certain abdominal operations, such as herniotomy; 6. In cases where venous engorgement is a decided advantage, as in the ligature of large arteries; 7. Chloroform is generally the more preferable agent where anæsthetic is required to be frequently exhibited to the same individual, man or animal, the class felidæ excepted; also possibly, where convenience, or unconscious anæsthesia is a prime factor, in the young and vigorous, and there is assuredly no tendency to degenerative disease; and when anæsthesia is to be but brief or partial.

In aged animals convenience may suggest, at times, the primary employment of chloroform, but where anæsthesia is to be prolonged, its replacement by ether will be found less taxing and wearing to both anæsthetist and patient. Again, degenerative disease of the heart or kidneys, or both, as they are associated and interdependent more often than is commonly imagined, providing there are no serious pulmonary complications, ether should by long odds obtain the preference. But if pulmonary disease co-exists, the choice of anæsthetic must be the result of individual judgment on the part of the anæsthetist, based upon the peculiarities of the individual case. Where pulmonary disease exists without renal or cardiac complication, the morbid condition becomes, *per se*, an element of safety in the administration of chloroform, while it inhibits the employment of ether.

As compared with other agents ether, as a general anæ-

thetic, unquestionably stands first in regard to safety. The deaths justly accredited to it are not greatly in excess of those properly chargeable to nitrogen protoxide, and at the same time it must be remembered that the latter is commonly employed for a momentary and fleeting effect upon *healthy* organisms—as in dentistry—while the former is used for prolonged effect in diseased and debilitated conditions where the nervous system has been subjected to repeated assaults in the way of irritation and strain, or in conditions of sudden shock, as in trauma. Under such conditions, it will readily be seen that comparison as to safety, based upon existing evidence, is unfair; that the balance of safety in favor of nitrous oxide may pertain to conditions of application rather than to the agent itself.

A mixture of nitrous oxide and ether vapor has been suggested as doing away with the unpleasantnesses that sometimes obtain to the latter *solas*, but this has not been borne out by personal experience. So also the "triple," or "A.-C. E. mixture," has in some indescribable manner obtained the reputation of affording all the advantages pertaining to both ether and chloroform, with none of their disadvantages. Given, as it must be, with plenty of air, and under the conditions demanded by chloroform, it invariably gives the typical trace of the latter, proving that to it, and it alone, the mixture owes its anæsthetic influence: If administered freely, it often induces very rapid and dangerous fall of blood pressure, such as has been observed from the administration of spirit of chloroform or chloric ether. It is, then, simply a *dilute chloroform*, and by no means the best dilution, since the addition of the ether is antagonistic; besides being unphysiological, it is an unchemical and every way unscientific combination. Whatever there may be of either good or evil pertaining to ether, chloroform, or alcohol, should be kept apart; and the habit of uniting the one, and at the same time attempting to prevent the undue influence of the other, must always remain a matter of uncertainty and doubt, especially since ether and chloroform are in a considerable degree physiologically antagonistic; the danger to respiration and circulation would be

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doubled but for this, and in fact the tendency to cardiac arrest is enhanced. It would be well always to bear in mind the universal cosmical law that when there is an addition to good and bad of equal proportions of both, the bad is especially prone to dominate, and in the ratio of the square of the addition plus the square of the original. Breeders too frequently discover this to their sorrow.

During the last decade, a new method of inducing anæsthesia has been inculcated, whereby the anæsthetic agent is introduced to the general economy through the rectum and colon instead of the respiratory passages. It has secured some few followers, but only among the ignorant and half educated, since it is both irrational and dangerous, and places the action of the anæsthetic beyond control; already several lives have succumbed to the procedure. The absorption of the vapor by the walls of the intestine must necessarily be irregular and uncertain in consideration of the known phenomena of local anæsthesia, for if the walls be thoroughly paralyzed and relaxed the contained anæsthetic vapor remains inactive. On the contrary, if there be no obstruction by fæces or by spasmodic contraction, and the vapor passes far up in but moderate quantities, and is then insufficient to stimulate the parts, absorption may be very rapid.

In ether and chloroform narcosis that threatens life, when all else fails, much may be expected from immediate tracheotomy and forced respiration by means of bellows.* Artificial respiration after the method of Sylvester—which is by long odds the best—often fails to supply the lungs with oxygen in sufficient quantity to keep up the action of the heart.† In such cases forced expiration will in many, and perhaps the majority of instances, prove sufficient, especially in conjunction

* See paper by Dr. Geo. E. Fell, in Transactions of the New Jersey State Medical Association for 1888; also *Medical Age* for Sept. 25th, '90.

† Benj. Howard (Br. Med. Journal, 1888, p. 1155) in a paper read before the Medical Society of London, suggested that the cause of death in surgical anæsthesia is often due primarily to the valve-like action of the eppiglotis, which, falling backward, completely closes the laryngeal aperture, rendering abortive all efforts at artificial respiration.

with the hypodermatic use of anyl nitrite or nitroglycerin. Here, the patient instead of being squeezed, rolled, and tumbled about, is entirely passive, and will lie for hours without moving or appearing uncomfortable, or as long as forced respiration is kept up. Those who have had experience in the physiological laboratory, know that in dogs overdosed with an anæsthetic, life may be prolonged for indefinite periods of time by employing the bellows in connection with an opening into the trachea, hence there is no valid reason why the same procedure should not obtain where it is desirable to save life. It may here be noted that Dr. Geo. E. Fell has in this way been instrumental in saving several cases that were deemed hopeless; in one instance the life of a man was preserved through forced respiration continued without interruption for more than thirty hours; twenty grains of morphia had been ingested eighteen hours before a physician was summoned.

NOTE.—It was my original intention to speak of the other anæsthetics in this connection, such as ethyl bromide, ethyl chloride, methylen bi-chloride and nitrous oxide, but the length to which this paper has grown forbids. Whether I shall take them up later remains to be seen. I have, however, recently devoted considerable attention to each in the columns of the *Therapeutic Gazette* for September of last year.

PRELIMINARY REPORTS UPON KOCH'S ANTI-TUBERCULAR FLUID.

Translated by R. MIDDLETON, D.V.S., Philadelphia, Pa.

The following communication has been received by the "*Vos-Zeit*," respecting experiments with the Koch fluid, as made in Dorpat, Russia, upon cattle suffering from tuberculosis:—At present careful reports are being issued upon the inoculations which were undertaken at the veterinary institute in this city. After the presence of phthisis pulmonalis had been ascertained beyond controversy, by the physical signs displayed by the subjects, and also by the finding of the

tubercle bacillus in the bronchial and lacteal secretions, the cattle received subcutaneous injections of 0.1, 0.2, 0.3 ccm. of the lymph. On the day before the exhibition of the medium, the temperature was recorded every two hours from eight o'clock in the morning to six in the evening. On the day of the injection, and also on the following days and nights, it was measured every hour. The symptoms displayed when the fluid was introduced into the consumptive cattle were developed twelve hours later, and persisted for four; the temperature was notably increased. In some cases it reached 107°F; the intensity of the reaction, as well as the length of the febrile period, depended upon the quantity of the liquid injected.

The respiratory act was accelerated, and performed with more or less exertion; the appetite was likewise disturbed. The fluid when injected into healthy animals produced no deviation from normal; the post mortem obdunction of such animals was also negative.

Gutman, who superintended the experiments, expressed his judgment of the results in the following words: "The Koch lymph is an excellent diagnostic agent in tubercular cattle, and as such is of the greatest economic and veterinary importance."

These are the first official notices regarding the action of the medium upon tubercular animals of the bovine species. It is to be regretted that they were not issued from the land in which the celebrated discovery was made; it was not, however, for the want of suggestions in this direction. The trials will shortly be inaugurated upon an extensive scale in this country (Germany).

GERMAN REPORT.

The favorable results obtained in the human species by the use of the Koch fluid in the diagnosis of tuberculosis, has induced the Royal Board of Health to grant the Secretary of the Interior permission to try the worth of the agent upon tubercular cattle. The exceeding difficulty of an infallible diagnosis has always stood as an impediment to the perma-

inent eradication of this disease. Should the Koch medium become a practicable means of determining tuberculosis in animals, it would not alone increase the efficiency of the sanitary police, but it would materially aid the development of the agricultural and breeding interests.

To decide to what extent, and in what dose the agent reacted in cattle, the health office purchased two adult cows and one heifer. By special permission these were placed in an experiment stall in the Royal Veterinary College in Berlin, and at the expense of this institution were fed and attended.

The trials were carried out by the government adviser, Roeckle, and Dr. Schütz, rector of the college, under the direction of Prof. Dr. Koch.

The two cows were selected as tuberculous, from a large dairy farm; the calf was in perfect health, and was to serve as a physiological standard. All of the animals were examined at short regular intervals for several days previous, and subsequent to the injection; the chief purpose of this being to note the variations in respiration, temperature and pulse. At a determined time after the reception of the virus, the subjects were slaughtered.

Each animal received 0.5 ccm. of a Koch fluid, diluted with 4.5 ccm. of a $\frac{1}{2}$ per cent. phenol solution; the mixture was injected at one time upon the chest (dewlap) after the hair had been clipped and the spot cleaned and disinfected; the puncture was afterward closed by a flock of absorbent cotton dipped in iodoform collodion. The results were satisfactory throughout and in no respect complicated.

Case I.—Experiment animal; a seven year old cow of the Holland breed, 560 kilogrammes live weight; well advanced in pregnancy and yielding no milk. *Bacillus tuberculosis* not found in the expectorated secretion; temperature, $101^{\circ}\text{--}102^{\circ}$; pulse, 64; respiration, 18 per minute. Injection given at 8.30 a. m. on the 24th of January; the temperature steadily advanced, with variations, up to 9 o'clock p. m., when it reached 104° ; between 3 and 5 o'clock on the next morning it had registered 104.5° , by one o'clock p. m. it had receded to 102° . Post morten showed unequivocal tubercle of the lungs and

lymph glands of the chest; the spleen was somewhat swollen, and in the caseous masses of the lungs numerous bacilli were proven.

Case II.—Experiment cow, seven years old, Holland breed, weighing 590 kilos.; not pregnant, and giving milk only from three teats; from the fourth teat a small quantity of a slightly opaque, watery fluid, was expressible; in the latter and in the milk secretion no bacilli could be detected. Rectal temperature, 100-101°; pulse, 48; respiration, 12-14 per minute. Injected on the 26th January at 9 a. m.; shortly afterward the temperature began to ascend, and at 8 p. m. it stood at 104.4°; on the following day, 1 a. m., it reached the acme, 105.6°; by 7 a. m. the thermometer indicated 104°; from this time the retreat was continuous up to 3 p. m. when it had sunk to 101.5°. Post mortem exposed many discreet and confluent tubercular collections in the lungs, spleen, liver and lymph glands; echinococci were also found in the lungs and liver bacilli in the caseous product.

The pyretic reaction required about eleven hours to develop, and persisted for the same length of time. Some hours subsequent to the introduction of the lymph the point of injection was swollen and red, and upon pressure the patients evinced pain; these symptoms disappeared, however, during the following day.

Case III.—Control, or physiological subject of the Anglo race, three years old and weighing 327 kilo. Temperature, 100-101°; pulse, 52; respiration, 11-16 per minutes. Inoculated January 26th at 9 a. m.; neither a general nor a local reaction visible; post mortem also negative.

The execution of more comprehensive experiments is under consideration. These results essentially agree with those of Dr. Sticker, of Cologne, who injected 0.41 ccm. of the Koch fluid in each of four cows suspected to be tubercular. From seven to nine hours after the same, a fever reaction was observed; the post mortem confirmed tubercle in the lungs of all.

EDIBILITY OF THE FLESH OF POISONED ANIMALS.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Philadelphia, Pa.

The question respecting the edibility of the flesh of poisoned animals is of great signification. Our literature is wanting in scientific investigations in this direction, and it cannot be wondered at, therefore, that opinions upon the subject vary so diametrically. For a long period the now edible nature was considered as a veterinary axiom; we erroneously supposed that the meat of a poisoned animal, in which the presence of the deadly agent could be chemically proved, had a poisonous effect when eaten by the human being. The presence of only the smallest traces of poisons, ascertained by the most delicate chemical reactions, go to prove that the meat is not necessarily poisonous—for every poison is, in doses small enough, uninjurious. By a short process of reckoning we quickly perceive that such flesh is not as fatal as it at first sight seems. The fatal dose of strychnine for a 10cwt. ox is 0.5 grms., and for a 1cwt. man 0.05 grms.; 1 kilogram (2.2 lbs.) of the flesh of an ox killed with this quantity contained 0.01 grms., a quantity which is for man not harmful.

The same results are deducible from the fact that the wild races of Africa subsist upon the flesh of animals which are never killed in any other manner than by the poisoned arrow; in the eastern and western portions of this continent the seeds of strophanthus, the modern celebrated heart tonic, are especially applied to this purpose. The strophanthus seeds are a thousand times more poisonous than the leaves of digitalis purpurea.

A dangerously poisoned meat is only imaginable, under peculiar circumstances, as when the poison does not emanate from the stomach, but from a wound of the skin directly into the muscles themselves, and so is given opportunity to concentrate at one point. Upon this ground we may explain why the above mentioned African natives excise the flesh in the immediate vicinity of the wound. After a subcutaneous

injection of strychnine, eserine, morphine or veratrine the adjacent tissues, to the point of puncture, are dangerous, despite the fact that the poison is rapidly imbibed by the circulation. That such cases may occur in the practice, is shown by an observation in Adam's *Wochenschrift* (1861), where the flesh of a cow treated with veratrum caused nausea and vomiting, when consumed. Another possibility is, that such meat may be more dangerous for man than for animals; atropin, for instance, operates much stronger as a poison upon man than upon quadrupeds. It is known that man has been poisoned by eating of rabbits and hare that had succumbed from consuming the leaves of *atropa belladonna*.

The small number of experiments and observations upon the subject are directly against a toxicological action of the flesh. Harms fed, without injury, the flesh of a horse which had received 50.0 grms. of *nux vomica* decoct. to three dogs weighing from 1 to 3 pounds; the same writer records that the meat of a cow which had received 46.0 grms. of tart. emetic was neither injurious to man or dogs; Feser has experimentally proved that the flesh of animals poisoned with strychnine and eserine may be eaten with impunity; Lappa and Spallanzani arrived at the same conclusion respecting arsenically poisoned animals; the result of Sonnenschein's investigations upon the flesh of a cow that had received altogether over a pound of arsenic, showed only 0.0002 grms. of the substance in a kilogram of the meat—surely not a dangerous quantity.

In order to answer this question for ourselves, we instituted a series of experiments upon sheep, with strychnine and eserine; while strychnine is the most deadly alkaloid for most domestic animals, the alkaloid physostigmine is more poisonous to the dog and to man. The result of the experiments, especially regarding the latter drug, are of practical value. These trials consisted in poisoning sheep with strychnine and eserine and afterward determining the toxicological character of the meat by the following means: partaking of the flesh ourselves, feeding it to dogs, by chemical analysis, by physiological action upon other animals; the re-

sults agree completely with the opinion formerly stated, to wit: that the flesh of sheep killed by the alkaloids strychnine and eserine, when eaten is absolutely uninjurious for man and dogs.

EXPERIMENT WITH STRYCHNINE.

1. A strong wether, weighing 39 kilos., was killed by a subcutaneous injection of 0.05 strychnium nitricum; in 12 minutes after, the first symptoms appeared, and in 20 minutes the sheep died. We stewed and ate half a pound of the meat, together with the fluid therefrom, without noting any unpleasantness in the taste or experiencing any of the effects of the alkaloid. Three young dogs, weighing respectively 15, 17, 18 pounds each, received 1 kilogram of the flesh; despite close observation for several days no abnormal actions were seen.

2. A ewe weighing 24 kilograms was poisoned by injecting 0.03 strychnine—death supervened in 19 minutes. A half pound of the meat, together with the bouillon, was agreeable to the taste, not even being bitter or subsequently active. The same dogs, after consuming each 2 pounds of the meat, manifested no symptoms.

CHEMICAL ANALYSIS OF THE FLESH.

The extraction of the alkaloid was according to the method of Dragendorf. The muscle is cut as fine as possible and stirred with just sufficient water to give a thin broth; diluted sulphuric acid (1.5) is added until a distinct acid reaction is obtainable. The mass is now put into a retort and at a temperature of 50C. digested for 6 hours; after this the fluid is expressed from the solid substance and drained through a dampened filter. The meat is again mixed with water and digested for 4 hours at the same temperature, afterward pressed and filtered. Both decoctions are put into a single vessel and over the waterbath are evaporated to the consistency of syrup. The meat itself, which has already passed through two processes of extraction, is once more macerated in four times its weight of 95 per cent. alcohol for 12 hours, and the liquid portion, after filtering, distilled.

The water remaining after the distillation contains strychnine united with sulphuric acid, together with extractives and sulphates of the bases kreatin, kreatinin, etc. By agitating the acid solution with petroleum ether, a small portion of the extractives are removed; lastly, the acid liquid is rendered neutral by adding ammonia, and the liberated bases taken up by chloroform, but is always contaminated with a large quantity of the aforementioned basic bodies, which are by no process separable. (It would doubtless be interesting to apply the stas-otto method of extracting, with alcohol and tartaric acid, with the view of securing the alkaloid in a pure state.)

Sheep I.—750 grms. of muscle was exhausted according to the above method. The chloroform solution showed a plain though not very strong reaction of strychnine (blue color with potassium dichromate and sulphuric acid). The evaporation of the chloroform was followed by the precipitation of so much extract matter that no reliable result respecting the weight of the drug could be reached.

The substance of the liver, weighing 400 grms., was treated in the same manner; the chloroform solution showed strong reaction of strychnine; also abundant extractions which were inseparable.

Sheep II.—500 grms. of muscle was similarly subjected, and the chloroform showed a strong strychnine reaction. The liver, weighing 300 grms., also tested with Dragendorf's method, gave a materially weaker reaction.

PHYSIOLOGICAL EXPERIMENT (WITH WHITE MICE.)

- I. The liver extract from sheep No. 1. One-half of this subcutaneously injected, and in ten seconds death occurred under symptoms of tonic and clonic spasms. A second mouse, which received but one-tenth of the extract, manifested light muscular contractions and increased reflex excitability after the lapse of five minutes; in seven minutes spontaneous contractions were observed, and in eight minutes after the injection the animal died in clonic-tonic contractions.

II. Liver extract from sheep No. II. Mouse received one-tenth of the liquid, and after two minutes appeared excited; after four minutes the same jumped when the table was struck; fifteen minutes after, there appeared light muscle contractions; in nineteen minutes death supervened under clonic-tonic spasms. The second mouse was given two-tenths of the extract and in two minutes was excited; four minutes after is, strange enough, quiet and immobile; six minutes after, eyes closed and seemed ill; ten minutes slight contraction; sixteen minutes after, death under clonic-tonic convulsions. In both mice thirty seconds before death the tail was stiff and held upward, as though in opisthotonoid contraction.

III. Muscle extract sheep No. I. In six minutes after the reception of one-tenth of the fluid, the mouse showed some excitement. Second mouse received two-tenths of the same, and in seven minutes appeared frightened when the table was struck; in twenty minutes after both were easily frightened; twenty-six minutes after, individual contractions; forty-five minutes contractions progressing and great fear present; seventy-five minutes after, both animals crouched and apparently ill; in two hours after, both ate bread; three hours, behave naturally, and are frisky; during five hours of continued watching they maintain appearances of health, and on the next day showed themselves as well as previous to the injections.

IV. Muscle extract, sheep No. II. Animal received one-tenth of the extract, and in nine minutes died. The second mouse was given two-tenths and in eight minutes was also dead.

V. The remaining muscle extract was mixed with 30 ccm. of water and injected into a dog weighing ten kg. No sort of working could be differentiated, and after one hour the same was lively and free of any symptoms of a toxic nature.

EXPERIMENT WITH ESERINE.

A wether weighing thirty-two kg. received 0.5 grms. of eserine sulphuricum; death resulted in thirteen minutes.

A half pound of the meat, as well as the bouillon therefrom, was eaten by us without injury or any characteristic symptom. The three dogs, already mentioned, each received one kilogram of the raw flesh, which they ate with avidity and subsequently showed no unusual signs, not even contraction of the pupil.

CHEMICAL ANALYSIS OF THE FLESH.

This embraces I. Muscle, 1750 grms.; II. Liver, 500 grms.; III. Throat, lungs, kidneys, blood, etc., 1000 grms. The procedure was as in the analysis of meat poisoned by strychnine, except that the easy decomposing nature of the alkaloid under consideration necessitated particular care. The digesting process was carried out in a darkened chamber, away from the solar rays, and the temperature of the water-bath did not exceed 30° to 35°. In filtering, we noticed a peculiar red color of the filtrate, which indicated that at least part of the eserine had been oxidized to rubreserine. The evaporation of the filtrate, and the distillation of the alcohol were conducted on a bath of 100°. It is hardly necessary to state that also in this chloroform solution considerable quantities of extract matter were separated. Upon testing we discovered not the least trace of eserine in the liver and muscle; on the contrary, the blood, etc., showed distinct eserine reaction. The test of Eber was applied, and is as follows: a drop of the suspected solution was put upon a porcelain dish with a drop of barium oxidum in solution, and immediately a red color appeared; after drying, the drop turns blue at its periphery (physostigmine blue), this blue disappeared with the production of the original red when water was brought in contact with it.

After the chloroform containing the free eserine was evaporated, the Eber test was applied without the faintest tint of color, the test was negative; after drying, however, the same showed a plain blue on the outer edge, and when water was brought into contact with it the characteristic red color made its appearance.

After two days the reaction was weaker, and after

four days it could not be obtained ; the eserine had been decomposed. We are unable to explain why, in the second test, the union of the barium oxide solution, and solution of eserine, was not marked by the production of the color ; perhaps in the case before us the dilution was too great.

In any event the subsequent reaction, namely, the blue coloring after drying, and the red coloring after moistening, can be accepted as conclusive proof of the presence of eserine.

REPORTS OF CASES.

IS THIS ANTHRAX?

BY DR. D. P. FRAME, V.S., Colorado Springs, Colo.

During the last three weeks a very peculiar disease has broken out in two or three herds of horses in this vicinity. It has proved fatal in every instance, many of the animals being found dead in the pasture.

Those animals which I have seen alive, present about the following symptoms:

Pulse, 75 to 100, very irregular, now full and strong, again almost imperceptible, and finally becoming very weak and fluttering; temperature, 102.5 to 103.° F.; respiration, labored; visible membrane of an intense dirty yellow, conjunctiva covered with dark petechial spots, breath very offensive.

Sometimes a slight watery discharge from the nose, general condition good, but not high; great constitutional depression and languor, with a general desire to remain quiet. No colicky pain is manifest.

There are no external swellings of any of the glands of the head, throat, or body, or of the tongue, and no crepitation of the skin has been observed during life. In all cases a peculiar sore breaks out on one or more of the feet, an exudate comes through the skin, usually on the coronet at the side of the foot, rarely in the heel, the skin dries and cracks, and blood oozes through. When washed the skin has an angry red look.

The appetite is lost in those cases that have been observed, the bowels remain nearly or quite normal, though usually a large amount of urine is voided, which is of a dark red color. The animals live from two to three days, after first being noticed sick, and die without a struggle. About fifteen animals have died of all ages from a yearling colt to a fifteen-year-old mare, including three young mares, suckling colts. Some were found dead in the pasture, and so badly decomposed that post-mortem was impossible.

I have made several post-mortems, of which I report the following :

No. 1.—Three-year-old filly, found dead in pasture, had probably been dead twelve to eighteen hours; had been in good condition, no external marks of violence; rigor mortis slight. Sore on near hind foot; removed the skin, and found subcutaneous tissues somewhat inflamed and blood in vessels liquid; some extravasation of blood into the tissues; no swelling up the leg or of any of the glands. In opening the body many hyperæmic or congested spots were observed in the abdominal muscles, some of these being quite extensive.

Abdomen.—The stomach contained only a small portion of food, with a small amount of bloody liquid, intense inflammation over the villous portion; bowels below the stomach were much congested, and aside from some liquid matter in them, they contained a large amount of a jelly-like mass of colloid infiltration between the muscular and mucous coats.

Colon covered with petechial spots on serous surface and much congested on mucous surface. Mesentery most intensely congested, though the bowel itself was not much affected; congested spots over peritoneum. Liver very much inflamed, hard and tense to the touch, but easily broken down; when cut across, the cut surface presented a dirty yellow appearance and left a yellow exudate on the knife. Spleen enormously enlarged to fully five or six times its normal size, and filled with a black, tarry-looking blood in liquid state, structure very friable. Kidneys, right one normal, left one congested and showing numerous black spots. Bladder empty.

Thorax.—Lungs covered throughout their entire substance

with hyperæmic spots, which along the larger bronchi had broken down the lung tissue, and the blood had exuded into the air passages, which were consequently filled with foamy blood. Some pleurisy on right side.

Heart partly filled on both sides with dark liquid blood; cardiac vessels enormously engorged, the auricles presented a number of congested spots. Inside in both cavities were a large number of congested spots with a considerable amount of congestion in the mediastinum, and about the lower part of the heart. A considerable quantity of very bloody liquid was found inside the pericardium, and the membrane presented many congested spots. The muscular tissue of the heart was easily broken down.

All the blood-vessels of the body were more or less filled with liquid blood; no clots were found anywhere. The blood, while very dark in color, presented a peculiar wine color as well; and this dark—almost wine color—and fluid condition of the blood was characteristic of all these cases.

Brain presented a few petechial spots on surface and engorgement of all blood vessels.

This filly was seen alive and apparently quite well, though a little dull, on Friday afternoon, and was found dead on Sunday morning.

No. 2.—Mare fifteen years old, was sick when No. 1 was found dead, presenting symptoms described above. In this case large doses of hyposulphite of soda were given in drench three times a day. For three days she appeared to improve, then gradually sank and died eight days after first symptoms appeared.

Post-mortem.—Eighteen hours after death, rigor mortis slight, sores on two feet, one hind and one forward, also same kind of sore on the nose. Large emphysematous swelling on right side of the neck just in front of the shoulder, which when opened presented a blackened, disorganized condition, which extended down under the shoulder. In this swelling, which extended over a space eight to twelve inches in diameter, there was considerable extravasation of blood into the connective tissues.

On opening the body, very nearly the same lesions were found as in No. 1, except the stomach, which was quite full of partly digested food. Villous coat more congested than No. 1, and the same hyperæmic spots in the muscles. Intense inflammation of small bowels with colloid infiltration between mucous and muscular coats. Mesentery intensely congested; spleen not so much enlarged as No. 1, yet three times its normal size, and loaded with black, tarry-looking blood. Liver much inflamed and structure easily broken down. Kidneys, left one normal, right most intensely congested, with some patches of inflammation. Bladder empty. Lungs entirely covered with petechial spots, right one much congested in its lower half and showing small collapsed patches. Heart contained a small quantity of black, liquid-looking blood and presented many congested spots in both cavities and about the auricular portion. Its structure was easily broken down. Fluid in pericardium very bloody and abundant in quantity. No clots were found anywhere. Brain not examined.

This animal had fallen on the left side in death and had never been turned over.

No. 3.—Gelding ten years old, good condition, first seen June 28th, 5 P. M. *Symptoms.*—Pulse, 90°, very irregular; temperature, 103° F.; visible membranes intensely brownish-yellow, with many petechial spots on conjunctiva; breath very offensive; bowels torpid, very high colored urine passes in quantities; sores on all four feet and in angle of one hock. A peculiar twitching of external intercostal muscles was observed on both sides. Animal very weak, dragging his feet and staggering as he walked. Died without a struggle sixteen hours later. No treatment.

Post-mortem.—Four hours after death rigor mortis very slight. On opening the abdomen, numerous large, congested spots were observed in the abdominal muscles, and on removing the skin, the muscles of the right side of the back were congested and black, with much extravasation into all the connective tissues.

Abdomen.—Stomach full of partly digested food, villous portion intensely congested in spots. Small bowels very

highly congested on mucous surface and intensely infiltrated between mucous and muscular coats, with the same jelly-like matter common to Nos. 1 and 2. The colon presented a marbled or spotted appearance over its entire serous surface, so thickly was it studded with petechial spots. The mucous surface presented a blackened, disorganized appearance. Mesentery intensely congested and hyperemic spots over entire surface of peritoneum. Liver hard, hyperemic, very friable, and much enlarged. Capsule easily torn away. Liver when cut across presented a dirty yellow appearance, and left a yellow exudate on the knife. Spleen enormously enlarged and engorged with black liquid blood which showed a tendency to gravitate to either end when the other end of the organ was elevated. No means were at hand for weighing, but this spleen would certainly weigh twenty pounds; it measured twenty-two inches across the base, thirty-one inches long and six inches thick. Kidneys, left one congested, right normal. Bladder empty. Hyperemic patches over peritoneum.

Thorax.—Lungs thickly studded with petechial spots, which covered pleura as well, large patches of lung tissue collapsed, and all large bronchi filled with foamy blood.

Heart.—Pericardium presented many congested spots, and the contained liquid was very abundant and quite bloody; cardiac vessels engorged with liquid blood, and heart most intensely congested in both cavities, and about auricles. Structure very friable, small amount of liquid blood in both sides of heart; no clots anywhere. Intense congestion and infiltration in mediastinum.

Brain.—All vessels much engorged with liquid blood, and a few petechial spots on surface.

The post-mortem appearances of this animal were much more violent than any of the others; he was sick about sixty hours. Other post-mortems were made, which presented practically the same lesions as above.

I had no microscope at hand with which to make examinations of Nos. 1 and 2. Microscopic examinations of the fresh blood from spleen of No. 3, with a power of 350 diameters, showed numerous, straight, rod-like bacilli, motionless, with

rounded ends, and about three millimetres in length. The same specimen, under a one-sixth objective with one-inch eyepiece, showed the same bacillus in the form of numerous bead-like cells, enclosed in one common sheath. No means were at hand for cultivating.

REMARKS.—All of the animals affected have been out of doors on the ranges all the winter, and while they were not poor, yet their systems were in a debilitated, depleted condition in the spring. During May and the early part of June we have had an abundance of rain for this climate, which has brought up a luxuriant growth of grass on the pastures; and these horses, while not in high condition, were thriving and gaining quite rapidly. Only a small portion of the land is low, most of it being high, rolling prairie, some of it hilly, and all with a sandy, porous soil. The water supply is pure on these pastures. The altitude here is about six thousand feet. These animals died in three pastures about five or six miles apart, and all at about the same time, from June 15 to July 1st. No deaths have occurred since July 1st.

No disease has been known on these pastures in the past, though both places have been used for years for cattle. In one case, cattle were removed and horses turned in there about a year and a half ago; in another, horses have never been ranged there until this spring.

All of these dead bodies have either been burned or buried, and in all but one instance the horses removed to another pasture.

I report these cases, with this much of detail, hoping that by so doing we may gain some knowledge of the cause, what this disease is. Reasoning from the symptoms, and post-mortem appearances, with the history of the cases, we have called it anthrax. I have no record of anthrax in horses having existed in this section.

LACERATED, CONTUSED WOUND, WITH DIVISION OF THE CAROTID ARTERY, JUGULAR VEIN AND PNEUMOGASTIC NERVE.

By J. E. BROWN, V.S. Oskaloosa, Iowa.

The victim was a three-month-old colt horned by a Jersey bull, on July 27th, 1890.

The horn penetrated the skin just inferior to the groove containing the artery, vein and nerve, about fourteen inches posterior to jaw, and with an upward, rotary movement divided the vessels and lifted a portion of each from their place.

About ten inches of the carotid artery, divided anteriorly to the wound, was left hanging, ten or twelve inches of the pneumogastric nerve divided posteriorly to the wound, and five or six inches of the jugular vein divided posteriorly to the wound, were in the same condition.

The artery, from the straining and tearing of its walls, immediately plugged itself, but from the vein the hemorrhage was profuse. The owner of the horse was at hand, but could not get to it until it sank down, and then grasping the divided end ligated it with a thread.

I was immediately sent for, and on arrival, some thirty minutes later, found the colt again on his feet, but very weak, respirations quick and shallow, the eye on side of the injury was closed, and no effort or no power to raise the lid.

After using some stimulants internally, I drew the blood vessels out until their walls seemed healthy, and ligated them with carbolized catgut, cut off the injured portion, two inches of the artery and nerve, six of the vein, and after suturing the outside wound with silk and using carbolized dressing healed nicely.

I have had frequent opportunities of examining the colt, which is now over one year old, and seems to enjoy as near perfect health as any other animal; runs as fast and plays as much, and with as little fatigue as any other colt in the pasture; manifests no inconvenience from the accident or its results. The eyelid still droops somewhat, and the side of the head is not developed in proportion to the other. The pulse, as noticed in the sub-maxillary artery, lacks in volume on this side.

The respiratory sound in the lung and on the injured side has gradually weakened from the time of injury, and at present very little, if any, murmur is audible. The murmur in the opposite lung is very loud, and it is impossible to determine whether the slight sound noticed on the injured side comes

from the lung of that side or the healthy one. However, it is an evident fact that the lung from which the pneumogastric was shut off has become greatly weakened, and the opposite one strengthened.

AMAUROSIS IN A FILLY DEPENDENT ON OESTRUM.

By DR. F. HARVEY, D.V.S., Raleigh, N. C.

I submit the following case with the hope that it may prove interesting on account of the rarity of its occurrence in veterinary practice, as, although I find it mentioned in our text-books in connection with pregnancy, or as a result of castration, yet I can find no mention of its occurrence during oestrus.

On April 30th I was called to see a two-year-old filly which had until that day been in perfect health.

The history of the case was that the filly had been discovered to be in heat that morning for the first time, and in the afternoon in walking about the yard, it was noticed that she walked into objects, being altogether unable to see. She also had an excessive discharge per vulva.

When I saw her at first I could detect nothing abnormal about her eyes, but on closer examination, I found the pupils dilated and fixed. The near eye was more affected than the off. She was very much excited, and when her hind quarters would come in contact with an object she would kick violently.

I ordered her to be kept quiet, using no medical treatment.

On May 2nd the discharge stopped, and the sight began to return, and when I saw her again on the 6th, she could see perfectly, and was otherwise in good health.

INGUINAL HERNIA IN A GELDING.

By L. L. CONKEY, V.S., Grand Rapids, Michigan.

In the April number of the VETERINARY REVIEW, page 44, of 1891, Dr. R. T. Whittlesey, of Los Angeles, California, asks if

any member of the profession has ever seen a case of inguinal hernia in a gelding, strangulated or otherwise.

As I have not only seen, but successfully treated both, I will give a sketch of two cases, as per note taken at the time of the operation.

On the 29th day of August, 1887, I was called by telegram to see a bay gelding six years old.

On my arrival I found the horse lying on his right side groaning or grunting loudly at every breath. Pulse not much altered. Temperature normal, in consequence of which I looked for local trouble of the left scrotum.

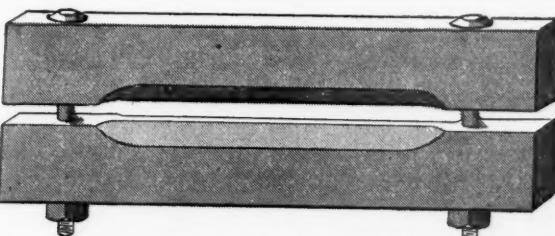
The owner, Mr. Graham, said the horse had been castrated five years previous; however, I got the horse up and made an examination per rectum with my right hand and arm, when I could distinctly feel the imprisoned bowel, but was unable to remove it by manipulations and taxis. The animal grew worse, and soon began throwing himself about violently for perhaps an hour, during which time I was trying to persuade Mr. G. to allow me to operate by incision, to which he finally consented; by this time about four or five feet of the intestine had come down and the tunica vaginalis had become ruptured anteriorly, so that the bowel lay down along the sheath. Leading the animal to a hillside near by, he soon lay down, when I secured him with ropes; placing him with his head down hill, I made a free incision through the scrotum, and with a probe-pointed bistoury enlarged the inguinal ring, after which I had but little trouble in returning the bowel. I dressed the wound with iodoform, then filled the crural and whole space that had been occupied by the bowels with cotton batting, pressing it well up against the abdominal wall, then placed four sutures through the skin to hold the cotton in place, and let the animal up. He walked to the water tank, took a drink, then trotted into the stable of his own accord. On the fourth day the sutures were removed and the cotton dropped out, the wound healed by granulation, since which time the animal has enjoyed apparently good health, being smooth and free from hernia.

Case No. 2.—Iron gray gelding, three years old, the prop-

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erty of Mr. Benjamin Van Raalte, of Holland City, Michigan. I was called to see this horse, April 14th, '90, found a large hernia on the right side, the size of a man's head, and a smaller one on the left side; the animal was in prime condition aside from the deformity caused by the hernia, which seemed to cause him no inconvenience; "but he is worthless," said Mr. Van Raalte, "unless the rupture can be cured."

I took two pieces of dry oak wood, seven inches long by one inch square, beveled the inner edges and bored a quarter inch hole in each end for bolts as shown by the accompanying engraving.



I laid the horse on the left side and carefully returned the bowels, then I applied the clamp around the old spermatic cord, clamping in all the loose tissue that I could handily, placing the clamp well up in groin or crural, tightening the bolts just enough to prevent the clamp from moving and let the horse up. Four days later I tightened the bolts a little, and in two more days I turned the burs as much as I could; the clamp sloughed off ten days later and in two weeks the animal was well. I then laid him down and operated on the other side in a like manner. The animal has since recovered, and I have operated on a goodly number of stallions for scrotal hernia by dissecting out the tunica vaginalis and placing a clamp well up against the abdominal wall, and allowing it to slough off.

June 23d, '91. I was called to Wayland, Michigan, to see a three-year-old gelding with *inguinal hernia*. The bowel protruding from both sides to an enormous size. The animal, although sixteen hands high, rangy trud, with plenty of bone, muscle, and action, was bought for \$30, showing that he was comparatively useless in his then unsightly condition.

I operated on him, using the bolted clamp as already described, except that I operated both sides at the same time, but I have not heard from him since the operation. However, I

think that a good omen, as in the veterinary practice a dead horse travels about nine miles to a live horse's one.

SUCCESSFUL OPERATION FOR THE CURE OF LARYNGISMUS PARALYTICUS, OR ROARING IN THE HORSE.

By T. S. BUTLER, V.S., Minneapolis, Minn.

While in Appleton, Wisconsin, last summer on a pleasure trip, I was requested to operate on a horse for the cure of the above mentioned disease.

The subject was a draft stallion about ten years old, which was almost worthless in his present condition without wearing a tracheotomy tube all the time. He was driven from Oshkosh to Appleton, a distance of twenty miles, to the stock sale to be disposed of.

Three friends of mine (viz.), Drs. Kaartz and Mack, and Mr. Johnson, purchased the animal at a small figure for the purpose of having him operated on. He was the worst roarer I ever saw, could not travel the distance of a block at a slow trot without falling unless the tube was kept in the trachea. He was operated on according to Dr. Fleming's method as laid down in his work on the subject, and at the end of six weeks, when the wound had completely healed, he was put to work on a dray in town, doing his work nicely without roaring, then was sold and taken to the lumber wood in the northern part of the State, where he worked all winter on a logging sled, hauling seven miles to the landing without roaring a particle and without wearing a tube. Anyone who has witnessed the loads they are compelled to haul can testify that the work is very hard.

I have been informed by several parties who worked in the same camp that he did his work as well as any of the other horses without roaring and still continued sound.

I have operated on seven cases thus far with the following results: Four complete recoveries, two partial and one failure. The best results have been obtained in the operations on draft horses.

Several articles have been written in this and the European countries condemning the operation, but, while it has not always proven successful in my hands, yet the percentage of recoveries are sufficient to warrant me in advising the operation when the animal is worth the expense of the trial.

There is no operation that always terminates successfully, and as this disease frequently renders the animal worthless, consequently the operation should be tried, and if not always successful will very seldom leave the animal in a worse condition than he was prior to the operation.

I should be pleased to hear the results of others on this subject through the columns of the REVIEW.

AMERICAN VETERINARY COLLEGE.

HOSPITAL DEPARTMENT.

A COMPLICATED CASE OF VARIOLA EQUINA.

By E. NESBITT, D.V.S., House Surgeon.

March 28th we were called to see a medium-sized chestnut gelding about five years of age, and the history of the case, with its subsequent developments, will, I think, be sufficiently interesting to entitle it to a small space in the REVIEW. The horse had been used for ordinary light driving purposes, and had been ailing for a day or two before we were called, refusing his feed, appearing dull and coughing occasionally. Upon examination, we found his temperature to be $106^{\circ}\text{F}.$, pulse 60, respiration very much accelerated, non-flexibility of loins, extremities slightly swollen, and the visible mucous membranes were very much congested. On auscultation, harsh mucous rales were heard, and on percussion, resonance was obtained. The case was diagnosed as one of bronchitis, and the following mode of treatment adopted. The extremities were bandaged; quinine sulphate was given three times a day in the form of two-drachm balls.

After the fever had been got under control we administered stimulants and the patient began to improve, tempera-

ture became lower, pulse less frequent, respiration easier, and he commenced to take food. The improvement continued for four or five days, when suddenly a change was noticed. The horse again refused his feed, would or could not drink, his temperature and pulse increased, the former to $105^{\circ}\text{F}.$, respiration became slightly accelerated. Pressure over larynx resulted in a fit of coughing and caused the horse much pain. He had laryngitis, and for treatment a stimulating liniment was applied to the throat, with electuaries administered during the day. The bronchitis subsided gradually and left him suffering from laryngitis, from which he was rapidly recovering when a second change was noticed; increase in temperature, quickening of pulse and respiration, and loss of appetite. Heat and swelling were observed in the region of the parotid gland and intermaxillary space. Abscesses, six or seven in all, formed in these regions; one, especially large, situated at the upper extremity of the parotid gland just at the base of the ear, when opened discharged about an ounce of purulent matter. After a few days' treatment, these abscesses began to heal and the patient once more improved and was getting along nicely when again a change for the worse was observed. Again pyrexial symptoms appeared, and when an examination was made of the lips we were surprised to find both inside and out of the upper and lower lip patches of eruptions characteristic of variola equina. These patches were more developed on the lips, but could be found scattered over the surface of the body, and on the neck under the mane. We subjected the animal to a course of tonics, when he again improved, but only for a short time, for a sudden and more serious complication had presented itself. The temperature had risen to $105^{\circ}\text{F}.$, pulse and respiration quickened. The mucous membranes, this time, were the agents that told us what malady had seized the poor animal. These membranes were covered with patches of petechia that are characteristic of purpura haemorrhagica. The membranes of both nostrils were covered with them, and the conjunctiva of the left eye presented a small patch of the spots. By this time the animal was very much debilitated and the owner de-

cided to send him to the hospital. He was placed in a large, loose box and carefully watched. His temperature dropped and large swellings appeared all over the body. The fore legs were very much swollen—the knees would measure thirty inches around. A large pendulous swelling appeared on the median line under the abdomen and thorax. In the inguinal region also appeared large swellings.

The swellings of the head were interesting. On the right side it was so great that it nearly closed the passage and caused respiration to take place almost wholly through the left side, which also was somewhat swollen. The appetite was poor at this time and a fatal ending was justly apprehended. The patient, because of the enormous swellings and extreme weakness, could hardly move, and when urged to do so in the stall, much inconvenience was experienced. Gradually the petechia in the nose and eye disappeared and the swellings slowly subsided. His appetite began to return and slowly he regained his former normal condition, and yesterday, May 18th, he went away to the country to enjoy the blessings of freedom in an open field for a short time. Our treatment for the last complaint may be worth special mention. We gave him eight ounces of very strong coffee; in this we put, at first, one-half of a grain of sulphate of strychnia and gradually increased the same to one and one-half grains at a dose. This was given him every four hours. Besides this, we administered one ounce of potassium nitrate three times a day in the drinking water. The result was, as stated before, a complete recovery. This was indeed a queer series of afflictions, beginning with bronchitis and continued by laryngitis, adenitis with the formation of abscesses, variola equina and ending with purpura haemorrhagica, which was the most serious of all.

EXTRACTS FROM FOREIGN JOURNALS.

WOUND OF THE CAROTID IN A HORSE.

By M. VAN AUTGARDEN.

In this case the operation of bleeding the horse, which had been confided to a blacksmith, was followed in the course of

an hour by the formation of an enormous tumor, occupying the entire extent of the jugular groove, and pressing so forcibly upon the trachea as to give rise to such a degree of roaring as to seriously threaten the life of the patient.

Tracheotomy was immediately performed, and the escape of the largest part of the extravasated blood though the wound was accomplished.

The flow then began to diminish, and soon after ceased entirely. The carotid had been closed by the pressure of the infiltrated blood. The animal recovered in a few days.—*Annales de Belg.*

NEW MODE OF GASTROSTOMY IN CATTLE.

By Mr. BAERTS.

The method adopted by the author is a simple one, and possesses the great advantage of preventing the entrance of alimentary substances between the layers of the abdominal muscles within the peritoneal cavity, thus preventing the possibility of abcesses, or of peritonitis. It consists in the application around the wound of two bands or cords, about the width of the hand, or of the part to be protected, upon which an assistant, placed on the right side of the animal, maintains a continuous and strong traction.

The incision of the skin, of the muscles and of the rumen is then made in the space between the two bands. The contents of the stomach are at once expelled, with a force varying with the traction made by the assistant, which has also the effect of compressing the distended abdomen.—*Ibid.*

ŒSOPHAGOTOMY IN THE DOG.

By Mr. F. HENDRICK.

This operation, although it is comparatively a simple one, is generally considered serious on account of the septic complications which may follow it. But in these two cases the author had recourse to the application of antiseptic measures, and he attributes his success to this fact. In the first case, a small greyhound had the œsophagus obstructed by a

rounded piece of bone, and the pressure produced by the foreign body upon the œsophageal mucous membranes, added to the fermentation of the food and saliva arrested in the canal, had given rise to a complete gangrene of the membrane. Notwithstanding this complication, the operation, followed by repeated phenicated washes, resulted in a rapid cicatrization, and after three weeks in a complete recovery.

The subject in another and similar case was a street dog, in which a piece of cartilage had given rise to nearly the same lesions. A similar operation, with the same antiseptic precautions, was followed with the same result.—*Ibid.*

BLISTER OINTMENT WITH CORROSIVE SUBLIMATE.

By Director DEGIVE.

Taking into consideration the peculiar vesicating and alterative properties of the bichloride, the author recommends the following mixture for the attainment of the desired results: of sublimate and pulverized cantharides, equal parts; 15 grammes for a strong mixture; 10 grammes for one of ordinary strength; both thoroughly mixed with 100 grammes of vaseline. Directions for use: shave the hair from over the part where the application is to be made; rub the ointment well in for ten minutes; six hours after, lay over it a single layer of the ointment. The maximum of strength is exhausted after twenty-four hours. However severe the effect may be, there is but little subsequent blemish left.—*Ibid.*

UPON THE DIAGNOSIS OF TUBERCULOSIS BY EXAMINATION OF THE OCULAR HUMORS.

By M. L. MANDEAU.

Early diagnosis is one of the principal points in veterinary practice, and sometimes equally desirable and difficult, but the observations of the author seem to promise the removal of a large portion of the difficulty, if not in all, in at least a large proportion of cases, whatever may be the extent of the lesion, or its location in the diseased animal. According to

Mr. Manderau, the microscopic examination of the aqueous humor of bovines has demonstrated the presence of the bacillus of Koch in cases of generalized tuberculosis, as well as in those in which only the lungs or the liver were the seat of tubercular lesions.

The process is simple: the animal being kept quiet, and the eye rendered insensible by cocaine, the cornea is punctured with a sterilized pipette, which is introduced parallel to the axis of the iris, and a sufficient quantity of the humor collected for the purpose. The operation is easy to perform, and is not usually attended with accidents or complications.
—*Soc. de Biologie.*

FILARIA OCULI IN A PARROT.

By C. W. W.

Early in last May, the attention of the author was called to a young grey parrot, the owner of which had for the last three months observed a small thread like worm darting about in one of its eyes. At first it seemed to give some inconvenience to the bird, and he frequently rubbed his eye with his claw, but latterly he seemed to have become accustomed to its presence, and ceased to give it any attention. The worm had grown steadily since its first appearance, and at the time of examination must have been at least half an inch long. The owner having decided not to subject the bird to an operation, no treatment was applied. The worm finally died, and could afterwards be seen in the bottom of the anterior chamber. There was at that time a slight inflammation of the iris, manifested by a reddish tinge, and the contents of the anterior chamber were not quite so clear as in the normal eye. When last observed, three months afterwards, the worm was still in the eye, in much the same condition as when noticed two or three weeks after its death.—*Veterinary Record.*

PARALYSIS IN A HORSE DUE TO A TUMOR ON THE SACRO-SCIATIC NERVE.

By W. J. MORAN, M.R.C.V.S.

This is the case of a cob which was reported as having become suddenly ill. When seen by the author he was sitting

upon his haunches, apparently in good health. Pulse and temperature were normal, but all attempts to make him stand upon his hind legs were useless. No informations could be obtained touching the origin of the injury. External and internal examination revealed nothing.

The floor of the stable being of asphalt, it was surmised that he might have slipped in the act of rising or turning, and in that manner sustained the injury. He was strong, and received a dose of aloes, and his back and quarters were blistered, but nothing availed, and after eight days he was destroyed.

At the post-mortem a tumor weighing seven ounces was found lying on the left sacro-sciatic nerve, as it passes over the ilium. It did not appear to be connected with the nerve, but was firmly attached to the surrounding cellular tissue between the muscles. No examination could be made as to its nature.—*Ibid.*

OPERATION FOR STAPHYLOMA.

By E. A. HOLLINGHAM, M.R.C.V.S.

The subject was a Persian cat, a very intelligent animal, and a great favorite of the owner. The cornea protruded between the eyelids in the form of a roughened tumor, the size of a Barcelona nut. All forms of treatment had failed, even to partial incision, followed by caustic. The eye and its membranes were much inflamed, and the use of atropine reduced it, but had no effect on the growth.

As the removal of the entire globe would disfigure the poor animal too much, it was decided to remove simply the diseased cornea, and endeavor to obtain a stump, to be composed of the sclerotic, the lens and the vitreous humor, and the operation was performed as follows: The cat being chloroformed and the eyelids dilated, three fine curved needles, armed with silk, were passed from above downwards, well behind the seat of the disease and in front of the lens, and the tumor removed, and, of course, the contents of the anterior chamber with it, the needles during this time acting as a bar to the escape of the lens. The needles were then successively

drawn together and the silk tied. The wound healed well, and to a casual observer the animal simply appears to be wall-eyed.—*Ibid.*

PUNCTURE OF THE COLON THROUGH THE RECTUM.

BY MR. IMMINGER.

Five hours after her evening meal, a mare eighteen years old was taken with colic and tympanitis. She had eaten green clover in the afternoon. The intestines were full of gas, and the pelvic curvature of the colon was distended and pushed in the pelvis. By puncturing the cœcum, the tympanitis had disappeared entirely; yet a rectal examination proved that the colon was still largely distended. The animal was then well rubbed and walked, and received ten centigrams of eserine. The next day the tympanitic condition had returned, and another cœcal puncture was made, and still the colon was distended, and it was then that the puncture of that organ through the rectum was decided upon. The rectum being disinfected with a solution of bichloride of mercury, the author introduced one hand into its cavity, while with the other he guided a trocar, the point of which was guarded with a cork. The place of puncture once secured, the operation was completed. It was followed by another escape of gas, and a new injection of eserine was followed by recovery two hours later.—*Wochenschrift fur Thierheilkunde.*

CONTINUED IRRIGATION IN DISEASES OF THE WITHERS.

BY MR. C. HAASE.

A gelding, five years old, had in front of the withers, on the left side, a painful swelling, in the center of which was a small wound, which discharged a large amount of thin, grumous pus. This wound formed the opening of a fistulous tract, running obliquely downward and forward, in a direction parallel to the second dorsal vertebræ.

The tumor was opened by two large crucial incisions, and the following treatment adopted: repeated washings with warm water, and injections of two per cent. phenic solution, made as often as possible.

Notwithstanding this treatment, carefully followed, the diseased process continued to increase. At four different times, new incisions and counter openings were made; portions of the ligamentum nerchæ were removed; and drainage tubes were used, and yet the necrosis continued to extend.

It was then that a system of continued irrigation was started, and a stream of warm water, regulated at will, was directed on the wound. At first the liquid filled up the gap of the wound, but it soon began to overflow, carrying with it the pus and other diseased structures, and two days after the entire surface was covered with healthy granulations. After a few days the irrigation was discontinued, and the animal recovered in a short time.—*Berliner Thierarztliche Wochenschrift*.

THE APPLICATION OF KOCH'S METHOD IN THE DIAGNOSIS AND TREATMENT OF GLANDERS.

Recently German veterinary journals brought the news that Prof. Kalning, of the Veterinary Institute in Dorpat (Russia), succeeded in preparing a fluid from cultures of the glanders-bacillus, according to the preparation of Koch's tuberculin. He named the fluid *mallein*, and reported that its injection produced a marked rise in temperature in horses diseased with glanders, a reaction which did not occur in healthy horses. He concluded that he had found a diagnostic agent for the differential diagnosis of glanders.

Now comes the sad news that Prof. Kalning infected himself in these experiments, and died of septicaemia.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, May 27, 1891. President L. H. Howard in the chair.

Members present: Drs. Billings, Blackwood, Emerson, Hadcock, Hitchings, Howard, Lee, Skally, Winchester, Winslow, and the Secretary. Honorary member, Dr. Stickney. Visitors: Dr. F. M. Perry and Mr. Andrew Ward.

Minutes of the previous meeting read and accepted.

The secretary was instructed to look up the attendance of members during the past year, in order to decide who is to receive the rasp offered as a prize by Dr. Lee for the best attendance.

Dr. Winchester suggested that the by-law requiring a thesis from candidates for membership be rendered inoperative for three months. It was found that in order to do this the constitution would have to be amended. Dr. Winchester thereupon withdrew his suggestion.

Motion made by Dr. Winchester that the Secretary notify all veterinary graduates in Massachusetts of the existence of the Association and invite them to join. Seconded by Dr. Winslow. Carried.

Moved by Dr. Winchester, that two hundred copies of the constitution be printed. Seconded by Dr. Winslow. Carried.

Papers and discussions: Dr. Billings was called upon by the President to address the Association. Dr. Billings delivered an address, a synopsis of which is given as follows:

He prefaced his remarks by saying that he felt he was among his friends, and that he would have renounced his title of veterinarian long ago if it were not for the fact that he was a member of the Massachusetts Veterinary Association. He then spoke briefly of Clark University, at Worcester, and said that some of his friends there would be happy to make a scientific investigation of the spinal cords of the horse which Dr. Howard had sent to Ward's Wharf for the members of the Association to examine, the animal having an exaggerated form of springhalt.

He then proceeded with the main topic of his discourse, saying that the Massachusetts Veterinary Association must do all in its power to push the profession forward in this State. If we put our shoulders to the wheel, he thinks we can accomplish a great deal for the advancement of our profession. One way to do this was to secure provision from the next Legislature to appoint a scientific veterinarian, at the State Experiment Station at Amherst, for the investigation of the infectious animal diseases. He thought that the State ought to be willing to appropriate \$15,000 for this work. What we want to do is to start this work at Amherst, and show the people that the veterinary profession amounts to something. In Massachusetts we may not have exactly the same conditions as in the West, but we have work here to do, if we can only get a start, and make a centre at Amherst, with the profession back of it. If we only had a place in Massachusetts where we could refer our doubtful pathological questions, it would help advance our profession more than anything else. What we want is to have our profession send in a strong petition to the Legislature to get a place established, a place where we can put our best man, and out of which good pathological work can come.

After Dr. Billings closed his remarks, the following discussion ensued:

Dr. Lee thought that one way to form a veterinary centre might be to raise funds to pay the expenses of a farm, to which we might send our surgical cases, or surgical cases which the owners did not care to see through to the end; the members of the Association to send the cases and render their services free.

Dr. Winchester thought that Dr. Billings had struck the right keynote in speaking of Amherst. He also referred to Dr. Goessmann's work on feeding experiments with animals, and said he had obtained results that would astonish the world when he was ready to publish them. Dr. Paige is a good man, although without the special training required by a scientist. Dr. Humphrey

is a good microscopist, and with such a chemist as Dr. Goessmann, and with the buildings already built, there is a valuable nucleus ready for immediate work.

The President said that Dr. Billings had warmed us up on a new tack, but that we are not very good as politicians to get such work done. An illustration of how useful a veterinary department at the Experiment Station at Amherst would be to the profession, and to owners of animals, Dr. Winchester cited an incident in his own practice. A farmer lost several cattle, and was afraid that he had some contagious disease among them, or that some malicious person was poisoning them. Dr. Winchester sent some of the viscera from animals which had died to Prof. Goessmann, who found that the trouble was due to acetic poisoning as a result of feeding too much ensilage. The food was changed, and the survivors recovered.

Dr. Billings mentioned a disease in horses, fed upon ensilage, resembling cerebo-spinal meningitis, which was undoubtedly due to some germ formed during the fermentation of the food.

Dr. Peters asked Dr. Billings if he thought Clark University would establish a department for the investigation of the infectious animal diseases, in case we failed to secure anything at Amherst. Dr. Billings thought that Clark University is a great thing, and that Dr. Hall is willing to do anything he can to help him, but that he favored Amherst *as the place*.

Dr. Stickney thought that the work at Amherst in feeding animals, and vegetable physiology, was about the only systematic work of any importance done in this country, with the exception, perhaps, of a little work on rabies and tuberculosis, which had been done at the Harvard Medical School.

The conversation then turned to a discussion of Dr. Howard's case of springhalt at Ward's Wharf.

Dr. Winchester made the motion that the Secretary be instructed to write to Clark University, asking if they would like Dr. Howard's springhalt case for purposes of autopsy, and if they would, that they be furnished with the results of both microscopic and macroscopic examination, and that the bones of the hind legs from the tibias down be returned to the Association. Seconded by Dr. Winslow. Carried.

Dr. Winchester spoke of a case in his practice at Lawrence, of a dog bitten by another one last July, which showed no evidences of rabies until the other day. Dog, upon post-mortem by Dr. Winchester, was found to have foreign bodies in stomach, stomach congested, brain congested, and effusion in the ventricles. He had bitten other dogs. Query: Will they go ten months before showing symptoms? Dr. Winchester then spoke of a dog which had not been in contact with other dogs for twelve months. He shows rabiform symptoms, and was poisoned by him. On post-mortem the stomach showed erosions; brain not examined. Diagnosis in this case, gastritis.

Dr. Lee reported a case of hernia in a gray gelding. The animal was a young one which the owner had just bought, and the first night he was brought home kicked over the partition of the stall, the near hind leg hanging over the partition. After freeing him the owner found he had a large swelling above the left flank, but did not attach much importance to it. He did not seek professional advice, but took the opinion of a friend, who told him it would be a

"gathering," and to wait a few days until it "softened," and then to "stick a knife in it." After a few days the owner "stuck a knife in it," and as nearly as Dr. Lee could find out a little blood-stained serum ran out. Later in the day the horse was taken with colicky pains, and Dr. Lee was sent for. He found a loop of intestine protruding from the opening made by the knife, and already becoming gangrenous. After getting Dr. Peters to see the case in consultation, it was decided that the only thing to do was to destroy the animal. Upon post-mortem a rent six inches long was found in the muscular coat of the abdomen, in the upper part of the flank, the peritoneum and intestines being retained by the skin and subcutaneous connective tissue. The animal had been regularly worked for a week or ten days after receiving the injury up to the day the owner had opened the swelling. The loop of protruding intestine was the size of a man's fist, strangulated at the opening in the skin, and had commenced to mortify.

Dr. Lee also reported a case of a horse that had had trouble with his teeth for four years. About three years ago the first upper molar tooth had been pulled out, and the animal's mouth afterwards neglected, the unopposed lower molar grew until it had worn a hole in the palate, exposing the lower ends of the turbinated fours and causing them to ulcerate. There was a disagreeable smelling discharge from the nostril and the horse made a roaring sound when put to any exertion. Dr. Lee removed the overgrown first lower molar, and knocked out two pieces of the root of the upper molar which remained, leaving a hole as large as a half dollar in the floor of the nostril. This hole had to be plugged with oakum when the horse drank, as if left open it prevented his making a vacuum with his mouth, and hence he could not drink. The hole is now closing rapidly with healthy granulations on the ends of the ulcerated turbinated bones, the discharge is ceasing, and has lost its disagreeable odor, and the horse now feeds easily and is rapidly gaining in flesh and strength.

Dr. Winchester reported a case of fracture of the pubic symphysis in a mare which was trying to foal. She was standing upon a wet floor when her hind feet flew out sidewise, and the ischiopubic symphysis split its entire length.

Dr. Winslow said he had a case of ulceration of the palate similar to the one reported by Dr. Lee.

Dr. Blackwood reported a case of rupture of the uterus of a mare used on the horse cars. She was in foal, and last winter fell down and the car on to her. She did not seem much hurt at the time, and was soon able to resume work again. One night this spring he was sent for in a hurry to see the mare, as she was trying to foal, and evidently required assistance. When he arrived, the mare was dead, and a quantity of large intestines protruded from the vagina. Upon post-mortem examination he found a rent at the neck of the uterus through which the intestines escaped, and a fully-developed foal in the uterus. The edges of the rent were fully cicatrized, showing the tear to be an old one, and in all probability the result of the fall last winter.

Dr. Howard said that Mr. Ward must often have interesting experiences, and called upon him for a few remarks.

Mr. Ward related a case that might have been mistaken for rabies by mem-

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bers of the laity, which occurred in one of his hounds. The dog acted strangely one morning when he came down stairs, snapped at him and the maid when they went to touch him and acted in a very unusual manner. He told his man he was afraid the dog was going mad, and to chain him securely in the stable until his return that evening. He then set out for his place of business, but had not gone far when he met a neighbor who told him that one of his hounds had been smelling around one of his (the neighbor's) bee hives that morning and had been pretty thoroughly stung. Mr. Ward said that the case of rabies was at once accounted for, and he told the man to unchain the dog as soon as he returned home, and the dog was perfectly well up to the present time. He thought that many cases of so called rabies could often be accounted for in a similar way. Mr. Ward also kindly offered to keep the pony with springhalt at his wharf as long as the Association wished it to remain there.

Dr. Winchester reported a case of fistula of Stenon's duct in a horse.

Dr. Winchester moved that the Association extend a vote of thanks to Mr. Ward for his courtesy and kindness in keeping the horse with springhalt at this wharf for our observation.

Seconded by Dr. Stickney. Carried unanimously.

Meeting then adjourned.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, June 24th, 1891. President L. H. Howard in the chair.

Members present: Drs. Becket, Blackwood, Emerson, Hadcock, Howard, Marshall, Winslow and the Secretary. Honorary member: Dr. Stickney.

Minutes of the previous meeting read and accepted.

The Secretary reported having seen President Goodell, of the Massachusetts Agricultural College at Amherst, at commencement, with reference to the appointment of a veterinary scientist upon the staff of the State Experiment Station. Dr. Winchester had also talked with President Goodell about it at the same time. Both President Goodell and Professor Goessmann were in favor of such an appointment, and the Board of Control of the Experiment Station, at the annual meeting, held at Amherst, June 9th, had appointed a committee, consisting of President Goodell and Secretary Sessions, of the State Board of Agriculture, to meet a similar committee from the Massachusetts Veterinary Association, to discuss the proper steps to be taken toward the establishment of a veterinary department at the State Experiment Station.

Dr. Stickney spoke in favor of the Association's taking action to bring about such a state of affairs.

Dr. Blackwood suggested that the chair might appoint a committee to meet the committee from the Board of Control of the Experiment Station.

Dr. Marshall then moved that the chair appoint a committee of two to confer with President Goodell and Secretary Sessions. Seconded by Blackwood, and carried.

The President then named Drs. Winchester and Peters to serve on the committee.

The Secretary then reported that he had taken no steps towards notifying all veterinary graduates in the State of the existence of the Association, or towards having copies of the constitution printed, because he was instructed to notify *all* veterinary graduates, and there were some he thought it would be as well not to notify. And with regard to the constitution, he thought it might be well to modify it by doing away with the clause requiring a thesis from applicants for membership as one of the conditions of admission.

After considerable discussion it was decided that the matter of notifying veterinary graduates of the existence and objects of the Association could safely be left to the discretion of the Secretary.

A request in writing was then filed with the Secretary that Article II., section *a*, of the constitution, be amended so that section *a* of said Article be rendered inoperative for a period of two years from April, 1891, i. e., that the thesis as a requirement for admission be not called for during the period named.

Under the provisions of the constitution governing amendments no action can be taken until the next regular meeting, which does not come until September.

The work done at the session of the Legislature, just adjourned, for recognition and advancement of veterinary science, by one of its members, Mr. F. H. Appleton, of Peabody, was then brought up.

Dr. Marshall moved that the Secretary be instructed to extend a formal vote of thanks from the Massachusetts Veterinary Association to Francis H. Appleton, Esq., for the kind and friendly interest he had shown in the welfare of a hitherto rather neglected profession. Seconded by Dr. Hadcock. Carried unanimously.

Meeting then adjourned.

AUSTIN PETERS, *Secretary.*

CONNECTICUT VETERINARY ASSOCIATION.

The annual meeting of this Association was held at the Scoville House, Waterbury, on Tuesday, June 2d, at 8 o'clock in the evening.

The members present were E. R. Storrs, Chas. H. Smith, H. Whitney, N. Tibbals, Robert Todd and Thomas Bland. Geo. B. Towne, D.V.S. and Mr. J. Schofield, veterinary student, were also present.

The President, Dr. Bridges, not being present, Dr. Chas. H. Smith, Second Vice-President took the chair.

Dr. E. R. Storrs proposed Dr. Geo. B. Towne for membership.

The following officers were elected for the ensuing year. Thomas Bland, President; Chas. Smith, First Vice-President; Harrison Whitney, Second Vice-President; Robert Todd, Secretary; Nathan Tibbals, Treasurer.

Board of Censors: E. C. Ross, Geo. Bridges, E. R. Storrs, Harrison Whitney and Nathan Tibbals.

The retiring President, Dr. Geo. Bridges, not being present on account of poor health, his address of greeting was read by the Secretary as follows:

GENTLEMEN: It gives me great pleasure to greet you at this, the close of another year. I congratulate you on the success of our Association; little by

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little, step by step we have increased our membership, become influential outside of the profession as well as in it, commanding the respect of the public and official bodies of the State until the Connecticut Veterinary Medical Association has grown from its infancy, and passed through the struggles of its first years, through the combined efforts of a determined few who saw its needs and usefulness in future years and who—let me add—have stood fast to her helm ever since, and now we have a regularly chartered and incorporated Association composed of a body of men who are determined to still further advance the profession in our State, and at the same time are ever ready to protect stock owners from losses through contagious and infectious diseases, and only ask the confidence of the public that they may also be the means of protecting the human family from the transmission of such diseases from animal to man.

There have been many very interesting papers read and much benefit derived from their discussion. Interesting and instructive cases have been freely quoted by all. Much has been accomplished and last, but by no means least, the tie of fraternal fellowship has been still further strengthened, and it is the earnest wish of your humble servant that nothing will ever disturb it.

We may have our little differences outside, but no matter, let us go on in the future as we have during the past.

Our financial standing is good and we are every way in a flourishing condition. We have a committee on contagious and infectious diseases who have accomplished good work during the past winter.

No doubt you have all read their report as published by the State Board of Health. It is a correct version of the condition existing in our State on such diseases, and a step in the right direction.

The committee are to be congratulated on this good work, and I know have the thanks of every member of this profession at home and abroad, not speaking of the thanks due them from the many loving mothers and fathers who are many times using milk from diseased cows. If you have not done so I would suggest that the report be struck off in pamphlet form and well distributed throughout the State.

I hope this committee will be continued, and if the political muddle ever clears up let them draft a good strong bill.

If on tuberculosis, I am in favor of inspection of all herds of dairy cattle, compelling the farmers to report all cases in their herds accompanied by a certificate of the attending veterinarian. Any neglect on his part to carry out the law to be amenable to punishment.

I would have a fine imposed on any veterinarian who refused to grant such a certificate or fail to report any contagious disease, of whatever nature, brought to his notice. The question of indemnity to owners of diseased stock has often been discussed in different States, and it seems to be the opinion of many that a glandered horse is not worth anything anyway. I do not think that should be so. Why should a glandered horse be a dead loss in a State where this loathsome disease has been allowed to run rife for many years? In my opinion if this State would pay something, no matter how small, that in one year, or two at the outside, with proper laws and proper enforcement the disease would be entirely stamped out.

Before concluding I would like to call your attention to one thing we have neglected in the past year. We have not performed our duty towards our American veterinary journals. These journals must have support to live and material for publication. I would suggest that we give regularly, papers that are read and those of the cases quoted. I do not think it a good plan to crowd their pages with every detail of these meetings, but as much as in the Secretary's judgment would be interesting to the profession, I know that I find much food for thought in the reports of other Associations, and I think it no more than right that we too should contribute our share.

In conclusion I wish to thank you for the great honor you conferred upon me in the past two years. As I look back on the time now passed away I cannot but think of it with pleasure. At each meeting every member carried himself with decorum becoming a gentleman.

I take this opportunity to thank our faithful Secretary for his courtesy towards me on all questions and at all times, and if I have in any way offended him by alluding to the above, I wish to assure him that if I were his judge I would certainly acquit him.

The next meeting will be held in New Haven, on Tuesday, September 1st, at which time Messrs. Bland and Todd will read papers.

R. S. TODD, *Secretary.*

COLLEGE COMMENCEMENT.

The annual commencement exercises of the Veterinary Department of the University of Pennsylvania were held on the 11th of June. The following gentlemen received their degree of V.M.D., Doctor of Veterinary Medicine :

Bartholomew, Cleaver J.....	Philadelphia, Pa.
Bear, Benjamin S. J.....	Mt. Joy, Pa.
Bickel, Samuel D.....	Philadelphia, Pa.
Bunting, Elwood B.....	Burlington, N. J.
Conard, Milton E.....	West Grove, Pa.
Conrow, Abraham E.....	Moorestown, N. J.
Edwards, Warren.....	Philadelphia, Pa.
Entriiken, Harry D.....	Kennett Square, Pa.
Jolly, Charles R.....	Atlanta, Ga.
Records, John H.....	Lewes, Del.
Senseman, Frank B.....	Mechanicsburg, Pa.
Tag, William.....	Philadelphia, Pa.
Wheeler, Arthur S.....	New Orleans, La.

OBITUARY.

ROBERT LAIDLAW, M.R.C.V.S.

We regret to announce the death of Dr. Robert Laidlaw, which occurred some two months ago, in Albany, where he

has been in practice for a number of years. Born in Scotland, in 1822, Dr. R. Laidlaw came to the United States in 1860, traveling for some time through the country, and finally settling in Albany, N. Y. His diploma bore the date 1840.

CORRESPONDENCE.

A REPLY.

Every year about this time the readers of the AMERICAN VETERINARY REVIEW are treated to an article or two on "Graduates and Non-graduates," or "Regulars and Irregulars." It is an old "chestnut," and I wonder that the editor of the REVIEW will publish such correspondence. Mention is made occassionally that good articles are left out for want of space or time. Would it not be well to insert them in place of this quack correspondence?

No doubt there are worthy men in the country that are practicing veterinary surgeons and are not graduates. Many of them have not had an opportunity to attend a course of lectures for want of time or money. Those men have the sympathy of all honest people. But when an empiric comes out and claims to know more and to do more than educated men, I can only quote the old adage in reply to his correspondence. "Where ignorance is bliss 'tis folly to be wise."

W.M. PETRIE, V.S.

CRITICISM.

Editor Review:

DEAR SIR:—Having read V. G. Hunt's article in the REVIEW on regulars and irregulars, I wish to make a few remarks, for such a letter as that would, or ought to, exasperate any regular practitioner to think a man like him would have the audacity to remonstrate the graduates by raging.

Enclosed I hand you three dollars for the renewal of my subscription to the REVIEW which I find indispensable. Although so many are clamoring for a law to throttle all irreg-

ular practitioners and to stop this species of writing, would it not be a good idea to lay a heavy tax upon the irregulars and turn the proceeds into a pension fund for these regulars who can get no business, and who are crying aloud for protection. I for one would gladly pay my share of the tax. He also said the practice of medicine may be a science, but rather incomplete, and then tried to illustrate it by President Garfield's case, and the moonshiner of North Carolina, which at the same time was shot so full of holes that his hide would hardly hold ear corn, and was caused by an obscure mountaineer surgeon.

What a beautiful expression! it is just such illiterate individuals as him that makes so many people have such little confidence in the veterinary profession, and it is to be hoped the time is coming soon when such men will be known no more, and if Mr. Hunt would like to know my address so he can answer this, he will find it is,

HIAWATHA, KANS.

H. T. CARPENTER, V.S.

[This subject is now closed, and no further communication will be received, as we fear but little good to the profession at large could be derived from it.—EDITOR.]

PRACTICES FOR SALE.

Dr. J. H. Collins, of Akron, Ohio, writes: "I would like to correspond with some young veterinary surgeon wanting a good place to locate. This is a town of over 30,000, with good country surroundings. I am going out of practice, on account of age, and would like a graduate of the American Veterinary College. He must be respectable and temperate. I will assist him all I can to start. Address as above."

A first class veterinary practice for sale in Washington, Pa. For further information, terms, and reason for selling, etc., address F. A. Wiltrant, V.S., Washington, Washington County, Pa.